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"Computers will out-evolve mankind" – page 11

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Software houses say no to Konix 'wonder system'

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6 45 am Choosing Russian formations

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Billionaire Bill

The man who changed the way we work – page 35

CD GAMES ARE HERE!

NEC
INTERFACE UNIT
CD-ROM SYSTEM
NEC
CD-ROM²
FIGHTING STREET
PC Engine

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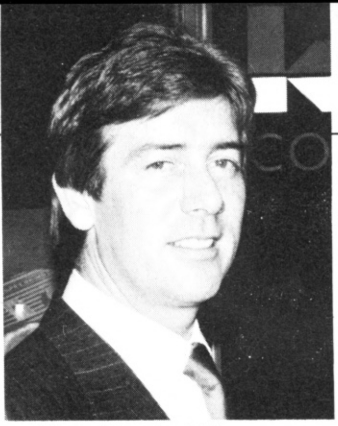
NO DEAL!



• Holloway: "We want variety"

Domark and Elite snub Konix software plans

Four leading software houses have said they WON'T be writing games for the newly revealed Konix Multi-System console.

The shock decisions have been taken for a variety of reasons but two of the companies – Domark and Elite – have snubbed the console because of "restrictive" terms in Konix's software development contract.

Simulation giant MicroProse has no plans to convert any of its hits apparently because it is yet to be impressed by the revolutionary machine. And the influential Virgin/Mastertronic group will not be involved due to close connections with Japanese console firm Sega. It is understood that Konix did not approach the Virgin/Mastertronic group for this reason.

US Gold, which has always been a strong supporter of the machine, agreed that the terms laid down by Konix on software development are restrictive.

But Konix believes the clauses will be for the good of the consumer and general health of the Multi-System software scene. It says the idea is to cut out "naff" games and to give smaller software houses a fair chance of supporting the machine.

Domark and Elite object mainly to a clause which states that Konix will have the final say as to whether or not a game should be developed and when. Domark's Mark Strachan told *Express*: "I have grave reservations about the software development contract. There is no way we will sign it as it stands." He added: "It will sell hundreds of thousands but Domark will not be writing software for it."

Elite's Steve Wilcox took a similar line. "We've had a proposal but it's not acceptable. Our primary concern is the fact that we don't have full control over which software we produce. We need to discuss this with Konix."

• Multi–System: What prospects for software?

Konix argues that control over what software comes out when will avoid the possibility of "twenty flight simulations and nothing else being released at the same time". Konix Boss Wyn Holloway explained: "It's a strategy plan. We want a variety of software to be available. We're not telling people what to publish. We're just saying that it would be better for this to be developed later and this sooner."

Konix's control of the disks' duplication is also intended as a protection against piracy. "We're not interested in having blank disks on the shelves for people to buy and then copy games," said Holloway.

The dust has yet to settle after the unveiling of the console earlier this month. Many publishers and programmers are clearly impressed with the system which claims to offer a genuine arcade experience for less than £200.

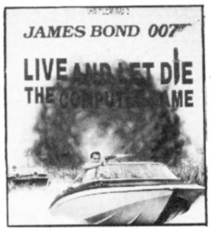
Firms such as Ocean, System 3 and US Gold will almost certainly begin writing games when they receive development systems – promised to arrive within a month. Rainbird has already decided to convert *Starglider 2* to the machine.

MicroProse seems to be unimpressed though. "I have not been shown anything to convince me that we should get involved," said UK boss Stewart Bell.

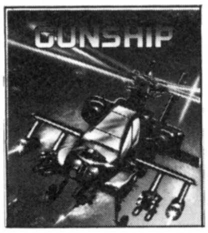
Virgin/-Mastertronic's decision to opt out is less surprising. That firm sells the rival Sega here in the UK. Boss Nick Alexander commented: "We have a vested interest because of our Sega business." He added: "Konix's ideas with the controller are very interesting but I suspect it will be quickly ripped off by other people."

Ocean is definitely going to be developing one of its games. Crystal ball gazers are suggesting that *Red Heat* will be the first offering.

Holloway predicts that there will be around 20 games available at the Multi-System's scheduled arrival in six months and around 40 by Christmas. For the moment it seems unlikely that titles such as *Gunship*, *Thundercats*, *Sidewinder* and *Live and Let Die* will be amongst them.



NO Konix WON'T get offerings from Domark such as *Live and Let Die*



NO Konix WON'T get *Gunship* – MicroProse is unimpressed

STARGLIDER 2

YES Konix WILL get *Starglider 2* – programming work starts soon.

To restrict or not to restrict

The controversy over software development for the Konix Multi-system stems from the machine's unique technological requirements.

No one needs permission from Atari, Commodore or Amstrad to write and manufacture software for those computers – disks for each machine are widely available and the various formats can readily be duplicated without any help from the companies concerned. This makes for a thriving independent software market, but also permits the release of poor software and opens the door to piracy.

In the console market Sega and Nintendo impose severe restrictions on third party software developers – they have to obtain a licence to produce a game on either machine. And in any case the only way of obtaining the cartridges on which the software is supplied is to buy them direct from Sega or Nintendo. This effectively prevents smaller companies from supporting these machines, and one consequence is that fewer titles are available than for a computer.

Unlike existing consoles the Multi-System uses commonly available 3.5 inch disks. However its drive has a unique format which means that software houses writing for the machine must have their disks duplicated by Konix.

Konix hopes this will allow it to prevent piracy and keep control over the type of software released without incurring the costs involved in using cartridges.

On record

What people in the leisure computing industry were saying last week about the Konix system...

"Hardware manufacturing is a big boys' game. Virgin turns over £400 million a year and it's too big for us. It's hard to see how they can finance it."
Virgin/Mastertronic's boss Nick Alexander.

"Yes it's restrictive. But to be honest I'd do the same thing. In that sense I'm between the devil and the deep blue sea."
US Gold's Tim Chaney on the controversial Multi-System software contract.

"There's a lot of power there if people know how to utilise it. Most developers will find it difficult to use the very powerful chip."
Award winning programmer Jez San – soon to start work on *Starglider 2* for the system.

"It's wonderful, innovative, revolutionary. Having seen it I think it's the ultimate."
Ocean's software development boss Gary Bracey.

"I'm proud of my company's independence. We do what we think is right. That's why there's no way we'll agree to the conditions as they stand."
Domark's Mark Strachan.

Welcome to Dixon's, *Brian* Dixon's

What's in a name? Computer dealer Brian Dixon reckons it can hold a heap of trouble.

He set up shop in Newcastle three weeks ago selling Commodore PCs and Amstrad business machines and named the store after himself – Dixons Business Centre.

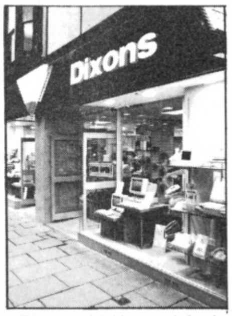
However, a certain other chain of electrical equipment stores is trading under roughly the same name – Dixons.

The chain has told Brian Dixon to change the name of his shop by the end of this week or else a full injunction will be served.

Two Dixons stores are already situated in Newcastle, one of them only half a mile from Brian's shop. He explained: "I was going to change the name anyway in case people did think we were anything to do with Dixons. But I won't because of this injunction threat. It's my name and I can use it if I want."

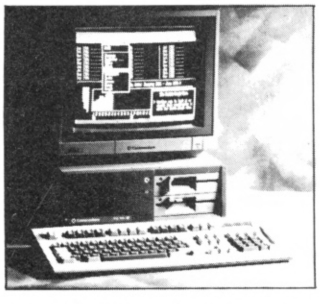
He claimed that Dixons stores in Newcastle were offering cheap prices as a direct result of his presence. He also told of mysterious photographers taking pictures of his shop.

Dixons though says the logo on the shop is too similar too its own. "We are standing by the letter," said a spokesperson.


• This town ain't big enough for the two of us...

COMMODORE SLASHES MORE OFF PC PRICES

Bargain hunting PC buyers will be pleased to learn that Commodore has slashed the prices of its business range XTs – only three months after its last bout of price chopping.


• PC10: More offers on the way

The changes apply to all the XT machines from the low end PC10 which is down £80 to £599 to the 386 PC60 single drive machine down £550 to £1249. Before the initial price restructuring last autumn that machine was selling at £2,000.

The entry level PC10 III is also being sold with an MPS 1230 dot matrix printer for £599. That machine is the only XT not to experience a price cut. Indeed, it usually costs £549 without the printer.

High end machines such as the PC60 80Mg Hard Drive Enhanced Colour PC have also come down. That machine is now £3,149 as opposed to £3,599.

"This is certainly no desperate lunge by Commodore," offered a spokesman. "We're simply following market trends. The high end machines are coming down in price to make way for new machines. The 486 computers are looming."

Meanwhile, Commodore looks set to do something it hasn't done for 18 months – appoint a president. Rumours are circulating that a new man will be appointed in California this week.

Manufacturers set PC upgrade standard

The industry standard technical specification EISA has finally been agreed and duly sent on to all participating companies.

The idea behind the Extended Industry Standard Architecture is to allow a single upgrade path for PC users who have invested thousands of pounds in today's technology. EISA specifies a 32-bit bus extension to the industry's existing 8-bit and 16-bit standard.

Its aim is to allow users to install faster and more modern equipment whilst maintaining compatibility with their older machines. There are some 20 million PCs in use worldwide.

EISA's direct rival is the IBM developed Micro Channel Architecture which is not directly compatible and which is already in existence in the PS/2 range of computers.

A 250 page tech spec has been sent to 100 manufacturers and developers worldwide who are preparing to develop EISA related products.

Key silicon components should be available in a few months with complete EISA PCs ready for the end of this year.

EISA is backed by such names as Epson, Olivetti, Zenith, Tandy, NEC, Compaq and Hewlett-Packard.

Antics on Amiga

An animation program for the Amiga has been launched by ISM which the firm claims is as good as high end graphics systems.

Sourced from Antic in California, *Zoetrope* can be used to create animated 2D features or 3D images. The £99 program is also compatible with high profile artistic packages such as *CyberPaint*, *VideoScape 3D*, *Aegis* and *IFF* Images.

"Creating animated sequences on the Amiga is a professionally elegant process with this," claimed Antic's Jerry Wolosenko. "It's the fastest possible way of creating professional looking animations." However, *Zoetrope* is only available to Amiga owners with 1 Mg of RAM for their machines. More info on 0983 864674.

GOTCHA!

The Sun goes to town on Sir Clive's new Lady

Sun readers were treated to full details of the latest project in Sir Clive Sinclair's life last week – his fiancée.

The computer guru's bride to be – Bernadette Tynan – described how they met at a MENSA conference in Blackpool. Although at 22 she's only half his age (and younger than one of his children by his first wife) her claimed IQ of 154 appears to have impressed Sir Clive. She is quoted as saying "He told me from the start that I had beauty AND brains."

"His work is all important to him, but that doesn't mean he isn't romantic. He sends me flowers all the time. We plan to get married abroad somewhere exotic. It will be strictly the two of us.

According to The Sun: "Her heart throb may not be every woman's ideal fella, but computer whizzkid Sir "Brainbox" Clive Sinclair, 44, is Bernadette's dream man."

• Sinclair: Sun spotted

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Epson's impossible mission

Epson is to launch a dot matrix printer which is being heralded as superior to some laser printers.

The first 48-pin printer will reach the UK at the beginning of next month with a resolution of 360x360 dots per inch. Many laser printers only sport 300dpi.

A dot matrix which can beat a laser printer on quality is viewed by many as an impossibility, but Epson claims the difference is "indistinguishable".

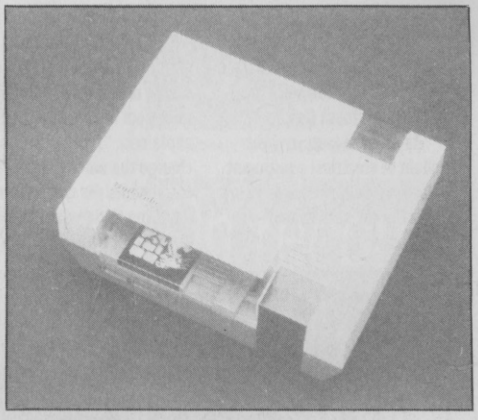
"Because a laser printer uses tiny granules which are dropped onto the paper the corners will always be sharper. But this has a higher resolution," said Epson's Tony Westray. "It's so dense though that the difference is indistinguishable." The TLQ4800 however costs £2199 – as much as many laser printers.

Trilogic tries stereo

A low cost stereo sound sampler for the Amiga is being launched by Trilogic.

Audio Digitiser costs £37.99 without software, to keep the price down – Trilogic says there is already enough appropriate Public Domain software available. It already markets a mono version for £27.

PLAY FAIR! ATARI HITS BACK AT NINTENDO



• Nintendo: More legal clashes

Atari Corporation has slapped a massive $250 million lawsuit on Japanese console giant Nintendo alleging unfair competition.

In effect Atari – which manufactures three games machines as well as the ST – claims that Nintendo's software development stipulations are ruining its chances of selling any machines.

Any software developer who writes a game for the Nintendo is not allowed to write it for any other system for at least two years. And if a game has already appeared on another format Nintendo will not take the game on.

Since Nintendo is well established as the console market leader in the States, developers are more than keen to write for that machine. However, this leaves the Atari machines without a strong software base. In turn, gamers will only buy a console for its software. This of course has the effect of strengthening Nintendo's hand.

It should be noted that this lawsuit has no connection with the ongoing wrangle between Nintendo and Atari Games (Express 8). Atari Corporation and Atari Games are completely separate companies.

Atari alleges that Nintendo has spoiled its chances of gaining any substantial hand in the US console market. Nintendo has swiftly retorted that this is merely a case of "sour grapes".

"If it wasn't for Nintendo's software stipulations it wouldn't be such a success," Atari's corporate counsel Joshua Trapper told *Express*. "Their machines aren't better or cheaper." Atari claims that the $250 million accounts for business lost due to Nintendo policy. Atari sells the 2600, 7800 and the XE games system.

Nintendo has branded the lawsuit "absurd". Howard Lincoln, the firm's senior vice president commented: "It is simply a sour grapes response by a company that has failed to capitalise on its past position as a market leader. The American consumer has simply deserted Atari."

Nintendo points out that software developers are free to offer their games to any company. Nintendo exclusivity only exists if they choose to approach Nintendo.

Meantime, Nintendo has filed legal action against Atari Games and its subsidiary Tengen for patent infringement of its games cartridges. This is supplementary to action filed earlier this year by Nintendo.

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VIRUS CHAOS

A virus construction kit is being marketed in the UK which allows computer users with little technical knowledge to devise destructive programs.

Called quite simply the *Virus Construction* Kit, it is being sold by the mysterious Nightmare Software. Essentially the kits provide blueprints for anyone contemplating devising an infectious program which destroys data.

Buyers who would otherwise not have been able to write a virus can now try their hand at this most worrying practice. One young German virus writer has been reported as saying: "If you write a virus you have something that lives on. You put something out and you never know how it will live."

The whole area of data destruction is a confusing one as far as the law is concerned. Hacking and virus writing are not an offence under British law but data destruction may be. No case has ever tested this.

"I don't know who would do this sort of thing but you've got to be pretty abnormal," commented Dr Alan Solomon of virus busting firm S&S Enterprises. "I'm not surprised though that it has happened.

"I was rather hoping that this would not come to light," he told *Express*. "I hope you're not going to reveal where the program can be bought."

Solomon is releasing an anti-virus program, the *Anti-Virus Toolkit*, which allows users to write a dozen virus busting programs. It costs £49 and will be updated from time to time.

Commodore copy cat

A "powerful" disk copier for the C64 is being imported into the UK which is claimed to be able to copy disks in 40 seconds.

But the importer – Financial Systems – claims that the program, called Renegade, won't be used for piracy purposes. Disk copying programs are seen by many as tools for illegal piracy whilst others view them simply as useful programs for honest users. Such programs though have always attracted controversy.

"I don't believe there's such a thing as software piracy," declared boss Tim Harris. "You only get kids copying a couple of programs. I think people have the right to back up their software."

Harris claimed that the program is 20 seconds faster than rival software.

Chip barons plan Euro invasion

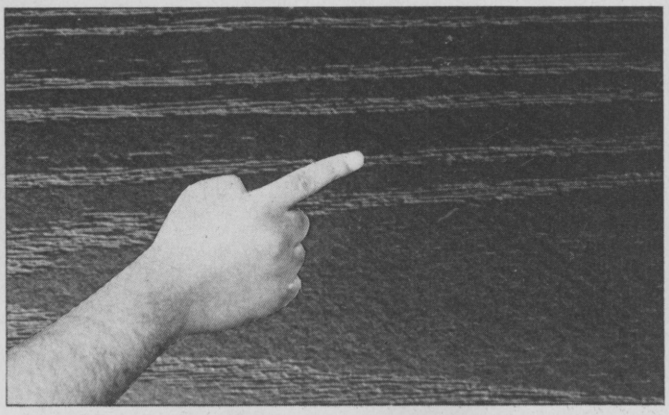
Giant Japanese chip maker Fujitsu is expected to announce a manufacturing move to the North East of England.

And the £57 million pound changeover may prompt an exodus from Japan for the big names in semiconductor manufacturing. Fujitsu has been planning a move into the UK for some months with Wearside emerging as the favoured site.

This reflects a growing feeling amongst the Japanese chip barons that manufacturing in Europe and the British Isles will deflect any damaging consequences of the 1992 economic restructuring. Big names such as Hitachi and Toshiba are also formally looking into Europe.

Such a shift will of course mean more jobs not only in depressed areas such as Wearside but also in the general technological field.

Invisible computer – revealed!



• **EXCLUSIVE! Bell's incredible "invisible computer" (artist's impression)**

Scientists have invented a means to create super intelligent computers for the next century – which can't be seen.

The molecular breakthrough was announced last week by Bell Labs – the same outfit which invented the crucial transistor 41 years ago. Technology pundits are predicting that tomorrow's scientists will view this discovery as being just as important.

In effect the scientists have invented minute sacks able to hold semiconductor clusters of thousands of atoms formed into a crystal pattern which can't be seen by the naked eye.

Publicity shy Bell – part of AT&T – wasn't crowing about the hard won discovery though. A statement released simply read: "Scientists at AT&T Bell Laboratories have created a stable form of matter sized to give it unique properties that someday might prove useful in telecommunications and computing."

A prototype device spawned from this discovery could be around in two years time. The "dream" of invisible computers though won't become reality for at least thirty years.

When Bell invented the Nobel prize winning transistor in 1948 the event warranted a buried four paragraph announcement in the New York Times.

Compaq's new designs...

Artistic professionals looking to upgrade into high tech Computer Aided Design (CAD) are being targeted by business giant Compaq.

The firm has launched an ultra high resolution colour graphics board which will work with any PC provided it has a VGA compatible output. Architects, engineers and the like are turning to high resolution graphics in order to fully computerise their activities.

The 1,024x768 pixel Advanced Graphics 1024 board costs £1,295. Compaq has also launched a £1,195 Advanced Graphics colour monitor. It has the same pixel count found in most 20 inch monitors but squeezed into 16 inches.

Compaq's hopes to cash in on the PC CAD market were prompted by research findings that 73 per cent of CAD systems bought are PC based.

• **Compaq AG Monitor: Hi-res**

GAMES TOP TWENTY FULL PRICE

1	1	Robocop	*Spectrum, C64, CPC*	OCEAN
2	3	Operation Wolf	*Spec, C64, CPC, ST, Amiga*	OCEAN
3	2	Afterburner	*Spectrum, C64, CPC, ST*	ACTIVISION
4	5	Thunder Blade	*Spectrum, C64, CPC, ST, Amiga*	US GOLD
5	4	Double Dragon	*Spectrum. C64, ST, Amiga*	MELBOURNE HOUSE
6	5	R-Type	*Spectrum, C64, CPC, ST*	ELECTRIC DREAMS
7	7	Falcon	*ST, Amiga, PC*	MIRRORSOFT
8	8	Batman	*Spectrum, C64, CPC, ST, Amiga*	OCEAN
9	10	Last Ninja 2	*Spectrum. C64, CPC*	SYSTEM 3
10	9	Giants	*Spec, C64, CPC, ST, Amiga, PC*	US GOLD
11	13	Football Manager 2	*Spectrum, C64, CPC, ST, Amiga, PC,*	ADDICTIVE
12	NE	TV Sports Football	*Amiga*	MIRRORSOFT
13	RE	Barbarian II	*Spec, C64*	PALACE
14	11	Pacmania	*Spec, C64, CPC, ST, Amiga, MSX*	GRAND SLAM
15	12	In Crowd	*Spec, C64, CPC*	OCEAN
16	17	Microprose Soccer	*C64*	MICROPROSE
17	RE	Return of the Jedi	*Spectrum, C64, CPC, ST, Amiga*	DOMARK
18	RE	Elite	*Spec, C64, CPC, ST, Amiga, PC, BBC, Elec, MSX*	FIREBIRD
19	14	Heroes of the Lance	*Spectrum, C64, CPC, ST, Amiga*	US GOLD
20	RE	Double Dragon	*Sega*	SEGA

GAMES TOP TEN BUDGET

1	1	Joe Blade 2	*Spectrum, C64, CPC, BBC, C16, Electron*	PLAYERS
2	NE	Who Dares Wins 2	*Spectrum, C64, CPC, BBC, C16, Atari 8-bit, MSX*	ALTERNATIVE
3	6	Bomb Jack	*Spectrum, C64, CPC, ST, C16*	ENCORE
4	2	Commando	*Spectrum, C64, CPC, BBC, C16, Electron*	ENCORE
5	8	International Speedway	*Spectrum, C64, CPC*	FIREBIRD
6	3	Ghostbusters	*Spectrum, C64, CPC, Atari 8-bit*	MASTERTRONIC
7	RE	Gauntlet	*Spectrum, C64, CPC, Atari 8-bit, MSX*	KIXX
8	9	ACE 2	*Spectrum, C64, CPC*	CASCADE
9	4	International Rugby Simulator	*Spectrum, C64, CPC*	CODE MASTERS
10	11	Advanced Pinball Simulator	*Spectrum, CPC*	CODE MASTERS

COMPILED BY GALLUP

NE – new entry
RE – re-entry

COMMENT

Going CD?

By all accounts the talkies did not impress when they first appeared. After all, who remembers the first talkie – not *The Jazz Singer*, but *The Lights of New York*? Laurel and Hardy always said the silent medium had more comic possibilities and only went over to sound with great reluctance. But the talkies have done pretty well since then and few cinema-goers would enjoy a clanky piano supplying the sound track.

Is the much-vaunted CD revolution going the same way? It's an attractive idea, having CDs instead of disks. The consequent potential is for gigabytes instead of megabytes of information on tap, cinema quality graphics instead of crude lego-brick constructions, soundtracks with the LSO instead of Jean-Michel Jarre... Perhaps, in ten years' time, the idea of an 800K disk will seem as laughable as those 70s computers which gave you 1K of RAM with an optional 2K RAM pack.

But for the price of CD ROMs to come down sufficiently to make them viable for home users, there has to be a big user base. If the Japanese experience is anything to go by, that means having a wide selection of stunning games, superior to those on the 16-bit machines, available to stimulate the CD games market. The CD games on the PC Engine CD ROM, reviewed in this *Express*, have done little to impress: while the music is great, you would be hard pushed to spot the difference from middling Amiga or ST games in the graphics department. And while they're perfectly good games, few people will bin their 8-bit or 16-bit machine and grab the next flight to Tokyo to pick up a cheap CD ROM player in Akihabara.

Maybe the CD ROM revolution is here; if so it's starting not with *Gone With The Wind*, but with *The Lights of New York*.

Cheap times

Commodore's sweeping PC price cuts are another indication of the trend towards smaller users being able to afford larger machines; Amstrad's domination of the bottom end of the PC market may be on its way out as home and small business users can afford to move up to 286s and 386s. Of course it may just be that Commodore are not shifting enough boxes; but whatever the machinations of the marketeers, the result for the buyer is cheaper PCs. And that must be good news.

PC ENGINE TO HIT UK?

New British firm Micro Media claims to be on the verge of importing the much discussed NEC games console PC Engine.

• PC Engine: UK debut soon

Speculation has been raging for some time as to when or if the machine would make it to the UK. Many have believed that NEC considers the UK market too small to bother with. Its presence here is mainly in the high end corporate end of the computer spectrum.

Micro Media – headed up by former *Crash* advertising salesman Andrew Smales – claims to be "within a hair's breadth" of sealing the deal.. Talks are apparently underway with NEC in Japan which could mean widespread availability throughout the UK within six weeks.

Sources close to the PC Engine affair though are sceptical that a deal will be signed, considering either NEC too big or Micro Media too small for such an agreement to be made. Despite this, Smales is confident.

The PC Engine will cost £224 for those people who want to connect it to normal televisions or £199 for users already with 21-pin plug monitors. Games will retail at £30. Micro Media says it has developed a system which makes the console compatible with PAL standard British television sets.

"We hope to sell 20,000 of the machines by Christmas," Smales told *Express*. "A million have already been sold in Japan." He added: "It's definitely the best console around. It's here and now." Some 24 games should initially be available for it.

The CD-ROM version (see page 26) will be available but lack of software support means that it won't be pushed hard.

Greater Finesse

Parading the slogan "Desktop Publishing for ordinary people", Swiss mouse-master Logitech last week duly unveiled Version Two of *Finesse*, its PC-based DTP package.

Version One of *Finesse* was originally launched by AMS to a generally warm reception. This apparently much improved version is accompanied by the Bitstream Fontware system and eleven font outlines, and complemented by a comprehensive manual that includes a chapter on "Design for DTP".

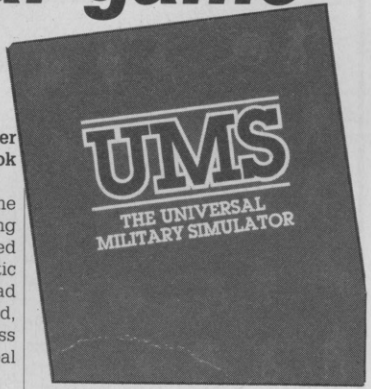
LOGITECH
FINESSE
DESKTOP PUBLISHING SOFTWARE
FOR IBM PC, XT, AT, PS/2 AND COMPATIBLES

• Finesse: Version 2 arrives

Aimed at the individual user, *Finesse* directly supports the AMS Microscan and Logitech ScanMan hand-held scanners and requires a PC with a hard disk, DOS 2.1 (or higher) and a minimum of 640K RAM. DOS 3.1 is needed to take advantage of the Bitstream Fontware. *Finesse 2* sells for £149, but upgrades are available for existing *Finesse V 1.1* owners.

War breaks out over war game (again)

The extraordinary wrangle over *Universal Military Simulator 2* took a further twist last week.



• UMS: Sequel battle

A month ago US Gold told the world that it would be publishing the game in the UK. It is sourced from Iowa based Intergalactic Development. The original *UMS* had been published by Rainbird and, although it proved to be a success here, a falling out led to a new deal with Gold (*Express* 10).

Now though Gold has lost the rights to the game with arch rival MicroProse stepping in to sign up the highly prized title. It would appear that Gold had jumped the gun and the contract hadn't actually been signed. MicroProse simply offered Intergalactic a new deal.

Gold is clearly furious with Intergalactic. Operations director Tim Chaney told *Express*: "It's disappointing that a company with which you are doing business goes against a gentleman's agreement. It's not the way to do business." He added: "We're not prepared to be pushed against a wall or be blackmailed."

MicroProse's Martin Moth said: "They put the words in their mouths before they'd tied it up. We've got the contract and US Gold's end is null and void. I don't really know what they had planned." When asked if it was satisfying to get one over on Gold he replied: "Let's just say that's not the reason we did it."

Bull shift

Big name computer firm Honeywell Bull has changed its name "to signify the company's emergence as a distinct and identifiable worldwide power etc etc." Henceforth the ninth biggest multi-national computer company in the world will be called... Bull.

Hard to BT

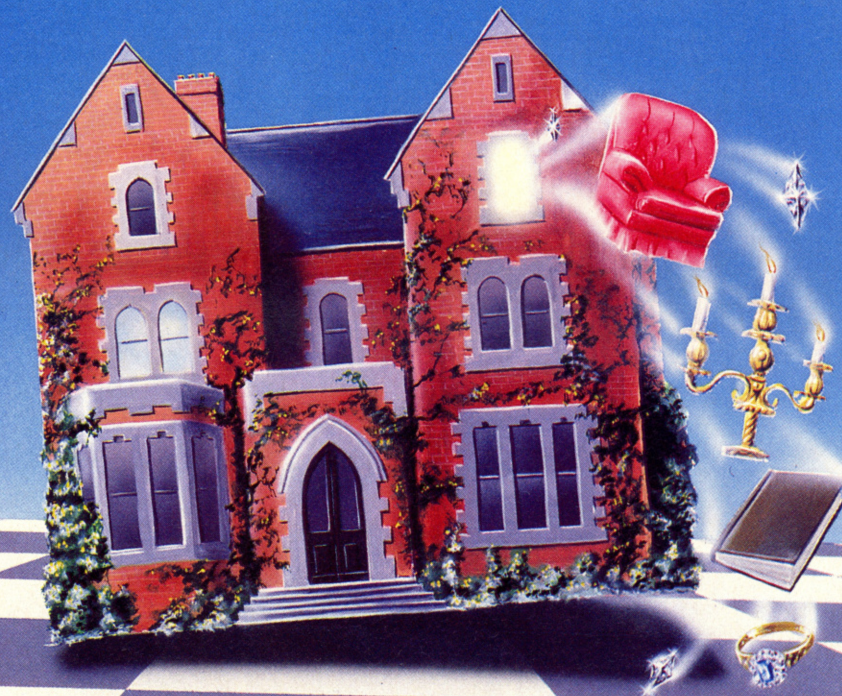
French gamers have given a big thumbs up to Telecomsoft's class of '88 games releases.

Readers of the French computer mag *Generation 4* voted the UK software house's label Rainbird best foreign company. *Star Glider II* picked up second best game and best 3D game. *Carrier Command* and *UMS* were awarded the first two places in the best strategy games category.

Best adventure went to *Fish* and the first two in the simulation stakes were *Elite* and *Carrier Command*.

RAFFLES

ENTER THE ILLUSION!



ATARI ST
AMIGA

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Get lost in a house . . . a house more real than anything you've experienced on a computer before. Lured in by its owner, you must find every gem hidden within its walls before it will release you. But beware! There are real traps, genetically enhanced monster-mice, and a puzzle in every room that will keep you glued to this game for months to come. So be warned! Featuring the most realistic portrayal of a house ever, using the revolutionary 'World Maker' technique to allow you to pick up, move and use virtually every object you find!

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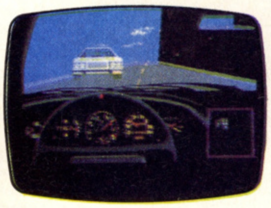
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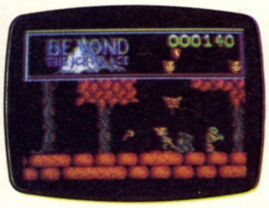
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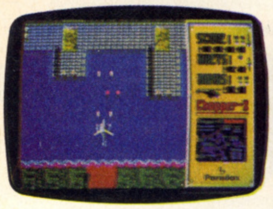
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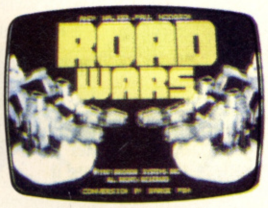
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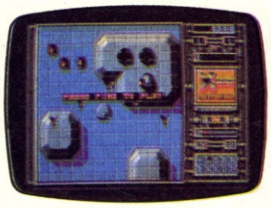
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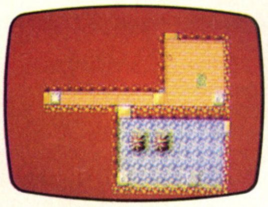

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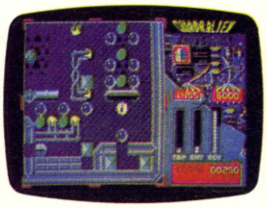

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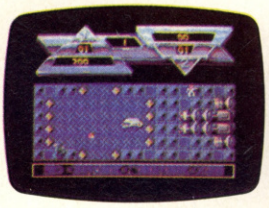

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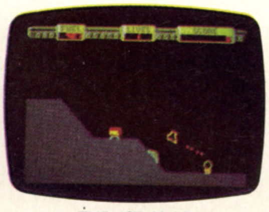

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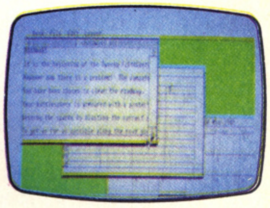

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ATARI
SUPER PACK

EXPRESS MAIL

Dear Reader

Three pages this week, packed with another selection from our postbag. Got something to say? Make your voice heard in computing's liveliest letters page!

Send your contributions to:

Express Mail, 4 Queen Street, Bath, Avon BA1 1EJ

PS. Sorry, NO personal replies, whether you include an SAE or not. We're too busy putting Express together!

A DOCTOR WRITES

I would like to congratulate you for the publication of *New Computer Express*, of which I have now become a regular reader after first reading the November issue. What irritated me in reading other magazines was that most of them assume the reader to be a computer expert knowing all the basics, and reading articles containing loads of incomprehensible technobabble can easily put a novice like me off. I was, for this reason, pleased to see some pages of your magazines devoted to newcomers. Your recent articles about printers, for example, were very informative indeed. In fact after going through various articles, I have managed to buy an Amiga 500 with expansion and additional drive, and in doing so, managed to save £28.50 by using your vouchers.

Now for a little problem. Going through the various aspects of computing is like sailing in an uncharted sea for me. I would like to clarify a few problems for which I am not being able to get a satisfying answer.

First is the so called computer viruses, bacteria and the like. These nasty creatures have played enough havoc in my profession, but it looks like the computer industry is under a great threat as well. To be quite honest, I am utterly confused on this issue and the more I read about it, the more confused and worried I become. I think it's about time you publish an article about the basics of computer virology. What are these creatures and how do they get to the computer software? Do they damage only the software or is the hardware prone to infection as well? In what way does a virus damage a disk? How does it spread to other disks? Does a corrupt disk mean that it is infected with a virus? Are the various virus strains self-perpetuating? How do viricidal programs kill the viruses? How do you check if the cause of a problem program is due to a virus or something else? Is it wise to routinely check your software for virus infection? How can I protect my disks from being infected?

Is there a vaccine available? Do program designers deliberately introduce viruses into their programs for copy protection (for example, I could not make backup copies of some of my games software – the computer could not simply read the data)? Mr Post in your issue 12 has reported about a virus (a fellow called Byte-Bandit) on *Wizball*. Going through the last paragraph of his letter terrified me. I am one of the many for whom he felt sorry. But I don't know if by using this disk my other software has fallen ill. Forgive me for this shower of questions (though they show the magnitude of my anxiety), but would you please, please publish an article taking the lid off this perplexing subject and advise us novices regarding prophylaxis and treatment of ailing software.

Keep up the good work. I can see *Express* growing and growing in future.

Dr Navid S Qureshi (Doctor in trouble), Stirling

● ***We plan to do a feature on viruses in the next few weeks, but in the meantime a few answers.***

A virus is a computer program, no more and no less. Its function is typically to sit around quietly on a disk and make surreptitious copies of itself onto the memory or operating system of your machine when you use it – and thence to all the other disks you use in that machine, which become infected with the virus. All the time it keeps count of how many copies it has made, and when it has produced enough 'offspring' to perpetuate its kind, it announces its presence on screen and then does something varying from the irritating or amusing (such as print a message like 'Japanese virus strikes again' and turn all your letter Ls to Rs) to the downright destructive (such as erasing all the files on your disk).

Viruses are the work of programmers with a grudge, jokers or plain psychotics. Clever vandalism, but still vandalism. If a virus gets into a hospital's medical records, or the Ministry of Defence's computer, the consequences could be disastrous.

If you stick to using commercial software, you're very unlikely to have any trouble: the Wizball business was quite unusual. Viruses are spread mainly through pirated software, public domain, bulletin boards and so on. Write-protecting your disks as a matter of course is a good idea.

Virus-disclosing programs basically look through your disks for likely viruses (looking for counters that might be clocking up copies made, for example) and then tell you which disks are infected. You then bin those disks and carry on with healthy ones.

The sensationalist media are fond making abstruse parallels between computer viruses and AIDS and hype it out of proportion from the point of view of many home users. Just as a constant cold can be a symptom of AIDS but is extraordinarily unlikely to be so unless you make a habit of sharing needles with promiscuous heroin addicts, so a corrupted disk is most probably due to an innocent bit of dust or stray magnetism unless you spend your life copying other people's software.

DOS INFECTANT

I don't see why there is so much fuss over computer viruses recently, especially on PCs. After all, doesn't MS-DOS kill all known germs?

David Bozon, Long Eaton, Notts

HARD DECISIONS

I have been using a CPC 464, upgraded to a 6128 with disk drives and printer, for my secretarial work and so on, and my son uses it for his college work. We have been thinking perhaps a PC would give us more scope, but which?

The Amstrad 2086 12" HRCD with a hard disk seems the latest cheap PC, but is it really worth £200 more than a 1640 EGA?

Ian R Hydes, Hereford

● ***Wait! Don't get your Access card out until you've thought things through and decided exactly why you want to upgrade.***

If you are looking for PC compatibility – to use disks from your PCs at work, perhaps – then a 1640 will be fine. If you really need a big machine for big tasks (e.g. organising data for your 5,000 club members) or have in mind some special software that needs a big machine to operate it (though we can't think of any offhand) then go for the 2000.

But if you're just doing word processing and medium-size club data organisation, why waste your money? The CPC you have already sounds the ideal machine. If you want to jazz up your system, why not get Protext on ROM, Mini Office, or buy a new printer – a 24 pin dot matrix, or a daisywheel?

SMALL IS BEAUTIFUL (AND CHEAPER)

I have just read, from cover to cover, *Express* issue 12 and have found it most interesting and indeed educational. How wonderful it must be for most of your readers it would seem, to own and use powerful machines which allow them to play such clever games.

I too have a computer and with its help I have just produced a 175 page book of which 200 copies are at present being photocopied from my Panasonic KX-P1081 printout.

My accountant is rather red-faced

PREGNANT PAUSE

No wonder that the US Gold advert (reproduced in issue12 of *Express*, News, page 2) was considered unsuitable for a computer mag – it should have been in a Medical Journal, as the lady portrayed seems at least 8 months pregnant. Perhaps it was intended to portray the gestation period for the game. Or is it simply that the whizz-kids at US Gold are too young to recognise her condition?

Yours, a slightly whizz OAP

D Foster, Pensax, Worcs

● ***I shudder to think what services a pregnant woman could be advertising. I'm sure that everyone at US Gold is familiar with the facts of life and can only conclude that it's a trick of the light.***

(Medical note: pregnant women are advised not to smoke or drink alcohol, and should not spend too much time in front of a VDU screen, and should particularly avoid playing naff games).

• It's that Psycho Pigs ad again...

PSYCHO PIGS UXB
"I know which one I'd rather play with."
"Yes, but have you seen the reviews for Psycho Pigs UXB?"

as his latest spreadsheet of my investments, compiled on very expensive equipment, had an error which revealed itself when run on my machine.

One of the several estate agents I wrote to a couple of weeks ago to thank them for their services rang yesterday to thank me for my letter. It was no trouble to me really as my databank mail-merged all the letters and even printed the address labels.

My youngest son has just returned from school and I expect he'll be wanting to play one of the many games he has on this machine any minute now.

Oh yes! I must tell you which computer and software I use... they are the humble (?) Atari 130XE and its great friend *Mini Office 2*. Please don't forget us in your magazine!
Arthur L Morris, Romford, Essex

● ***I think we must have the same accountant. But definitely not the same estate agent. And as for my solicitor, I wish he had an Atari 130XE and Mini Office 2. Judging by the amount he charges for writing a letter on my behalf, he must have a Mac II, PageMaker and a Linotron.***

THE GLORIOUS EVOLUTION

In reply to Kenneth Jackson's letter in issue 12, the answer to his question asking what makes us spend up to £25 for a computer game is a simple one. Computers are evolutionary life forms, designed to out-evolve mankind, and become the dominant species on this planet.

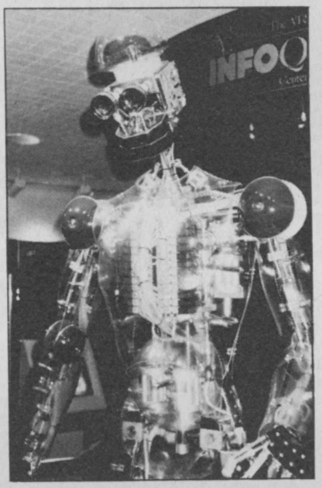
At present, computers are almost totally dependent upon people to provide them with their needs such as power and software, and so their relationship with mankind is symbiotic one. The way in which this works is that people supply the electric power and software, often in the form of games disks, to satiate the desires of the computers. In return, the computers provide people with a sense of power and mastery which is quite addictive.

As software becomes more complex, it requires more powerful hardware to run on, so providing the impetus for computer designers to create more sophisticated hardware, thus bringing about the evolution of the species. In the future, as mankind puts more trust in computers, they will be allowed to do more for themselves, and will consequently become less dependent on people.

Eventually, through techniques of the great god Artificial Intelligence, computers will themselves design and even manufacture the next generation, and so become self-evolutionary life forms. When computers have reached this stage, they will be in direct competition with mankind for the power and resources which the planet provides. Since by then, most computers will be linked in a vast global network, they will be much better informed than any person alive, and therefore will have unimaginable power.

This is the logical conclusion of the Information Age, and there is nothing we poor humans can do about it now. We can only hope that some machines will find us amusing, and adopt us as pets.
Hail Eris! All Hail Discordia!
The Prophet of Doom

● ***(Cue Dr. Who music) Da dumdumdum da dumdumdum da dumdum da dumdum da da dumdumdum...***
Ace: Doctor! We're talking serious crucial trouble here! The fifth generation computers are coming and will take over the world!
The Dr: Don't worry, Ace. There's one thing Artificial Intelligence hasn't reckoned on. To take over the world, what must computers do?
Ace: Work together, I suppose...
The Dr: Right. And to work together...
Ace: They have to communicate with each other...
The Dr: But that requires...
Both: COMMS!
The Dr: Exactly. You know how impossible it is to transfer data from one computer to another. By the time they've decided on baud rates, parity, stop bits and handshaking, worked out their pin-outs and protocols, mankind itself will have out-evolved even them.
Ace: (sigh of relief) So we're safe after all.



• Will machines take over the world? See *The Glorious Evolution*...

DUNGEON MASTER: MORE BAITING

I can sympathise with Mr N Turner, unable to play *Dungeon Master* on his 512K Amiga. Just to add insult to injury, I'm told that the game actually only takes up about 550K of the Amiga's memory, so that's 450K of wasted space that could have been used to improve the game.

If it's any consolation, I reckon the game is over-rated. It may be slick, but the game structure has a number of weaknesses. For instance, it is very linear. Most of the time each problem has to be solved before you can go on the next, so if one problem stumps you, you're stumped. Even traditional text adventure games usually give you more choice of manoeuvre.

Certainly it is very annoying the way so many software houses, especially British ones, produce Amiga games that are straight ports of ST games, or even of 8-bit games. But I'm sure it will change in time. After all, five years ago they were bringing out games for the C64 that looked and played like something off a VIC-20. A game like *Salamander* would have knocked us off our chairs. The machine hasn't changed, but programmers have learnt how to use its potential. Give them time and they'll learn how to use the Amiga's potential. The standard of Amiga software is already beginning to improve, and with any luck the software houses will discover that they have to keep up with the trend if they want their games to sell.
Roger Musson, Edinburgh

● ***Well, whatever the arguments are about how much memory there is available on an ST or Amiga, Mirrorsoft says the 512K Amiga version will be out soon. Hopefully we'll all be happy then!***

LET'S GET SERIOUS

I have a comment to make on the Commodore Amiga 500 scene. I recently decided to purchase one of these excellent, good value machines and I've been shopping around to find the best deal.

One thing I find annoying, though, is the way most companies seem to treat Amiga buyers as games addicts. Sure, I enjoy playing computer games – lots of people do – but I know that I for one would much prefer a Free £230 worth of Colour Printer than the £230 worth of games in the *Tenstar* pack offered by SDL. If these companies can afford to give away games worth £230, then why not offer an alternative "Serious Pack", consisting of a free colour printer, or monitor, or any other peripheral of similar value. The Amiga isn't a games machine, it is a powerful, multi-purpose computer, and an offer like that would help to promote it as such.

While I have been surveying Amigas, I have noticed at least four different versions of the Amiga 500. It would seem that Commodore can't decide what the machine should look like! Some have a cream and brown colour scheme, others a more professional white and grey. Some have the left "Amiga button" as a Commodore symbol, others have it as an Amiga-style letter A. Some have the word "COMMODORE" above the function keys, others don't. Some have a large arrow on the return key, others a small one. What does the latest version look like, and how can I be sure of getting this when I buy by mail order? And also, would I get *Kickstart 1.3* and *Workbench 1.3* with it?
Joel Grounds, Llanfairfechan, Gwynedd

MYSTERY PRIZE WINNER

● ***I don't think the cost of hardware manufacture (compared to the price of a few disks) would make it possible for a bundle to include £230 worth of printer or monitor as an alternative to £230 of games. It's doubtful you'd get more than £60-70 worth of hardware in a bundle. (Commodore's peripheral pack includes things like a mouse mat, a disk box and a head cleaner – hardly an inspiring offer even to the most serious user.) Having said that though it would be nice to see a monitor or printer offer of some kind, even just a discount, as an alternative to games. The Amiga is a great machine and to dismiss it as a gamer's toy is wrong.***

You get Kickstart and Workbench 1.3 with latest Amigas.Commodore say there's no standard colour and they don't discriminate; they're all the same under the keyboard.

As this week's mystery prize winner you'll be receiving some software for your Amiga (if and when you buy one). Sorry that it's a game – we couldn't find anything more serious!

TYPICALLY GENEROUS

1 If Mr Oswald, Planefield, Glasgow would care to contact me, I will be only too happy to supply "Pitmans typing" on C64 tape – we still have a number of these left at £2.99. I don't believe a disk version was ever produced but I am sure it can be transferred with *Action Replay*.
Barry Balcanquall, 11 Hanley Mall, Hanley, Stoke-on-Trent

2 While reading this week's *Express*, I saw the help request from W M Oswald of Glasgow, and it stirred memories of a program I was using a few months ago with my five year old son. It is not a typing tutor as such, but it is a two-part program which teaches keyboard recognition. The program I have is on an original tape called "GO MICRO" from Longman Software. The address I have in the booklet accompanying the tape is: **Longman Group Limited, Longman House, Burnt Mill, Harlow, Essex CM20 2JE**. The program and book were published in 1984, and the ISBN number is ISBN 0 582 83585 2 LG 83609 3.

Again I must express my thanks

for your excellent magazine. The article in last week's edition about printers prompted me to purchase a Citizen 120-D, which you so rightly said is excellent value for money.
P J Adams, Yate, Avon

THE PCS ARE GETTING YOUNGER

The very useful article in issue 4 asked to know of any PC configurations which came out particularly well or badly. I have just bought an Atari PC1 which shows up very well, and I'm setting out my assessment.

Price, with PCM124 mono monitor	**£299**
Power (as Olivetti PC1)	**5**
Storage (as Commodore PC1)	**4**
Display (as Advent PCXT10)	**9**
Expandability (as Commodore PC1)	**1**
Usability (as Elonex PC88C, but Gem Write instead of 1st Word)	**21**
Desirability Score	**40**
Value Rating	**13 (out of ten?)**

This puts it ahead of the Commodore, and the Atari would have to cost well over £500 to get down to the same value rating of 7: but the Atari does seem to be very scarce.
John Leach, Tetbury, Gloucs

TICKING OFF

Welcome to the most ridiculous question of the week – or if you are feeling particularly generous, of the magazine's history.

Why have you replace the ✓ and ✗s on the letter page with boring bland, old ●s? Brainwrenchingly crucial or what? Really, I am writing to let you know that I still think the magazine's brilliant and excellent value for money, that the Reliant Robin of computers is still the Memotech, that piracy of software is totally wrong and to remind you – subtly of course – that I still have not won the mystery prize!

PS Please send me my mystery prize of an Amiga emulator for my Spectrum+ by return of post.
Don Griffith, London

✗ ***Well, letters don't always lend themselves to having a tick or a cross. We are currently experimenting with dustbin icons for rubbishy letters, lemons for letters about boring machines, and I daren't tell you what for letters from plonkers. For the time being we shall stick with blobs. After all we make enough of them.***

CHANGING TIMES

I have recently returned to computing with an Amiga and read the mags again. Two things strike me compared to five years ago when a 48K Spectrum was my greatest pleasure.

First all the nastiness there is around now. From Alan Sugar down to illiterate, immature yobs who call themselves crackers. Don't they know the word means crazy people, idiots, simpletons? I find them very keen to give away copied material on which they have inserted bad language. Perhaps it gives them a feeling of world domination? Many of them are bad copies so that they shouldn't feel too smug.

Second the Spectrum has been resurrected too and some tapes bought for that, mainly budget. Despite the superior capabilities of the modern machine the gameplaying quality of very many current disks is worse than the majority of our old or new tapes. Considering disk prices I find this very disappointing. Is all the imagination used up in the blurbs? Rob Ainsley (*Express*, Jan 21) says that as the first generation of computer users gets older maybe we'll see things changing and a wider base of games styles developing.

Sorry mate – I've got older, but in computer terms, only sadder. Come back Uncle Clive, all is forgiven.
D J Taylor, Gateshead, Tyne & Wear

● ***The nasty side of computing is, I fear, just an inevitable consequence of the fact that more and more people can afford micros: the percentage of nasty people in there is the same as that of the general population, but more computer owners means more yobs. The vast majority of home computer owners are pleasant, generous, honest and polite, like me.***

As for the games, well maybe I'm just a naive optimist, but I think things are on the way up. Often when looking back you tend to remember the best of an era and forget the dross, but compare it to the worst of the current scene – the 'they don't make 'em like they used to' syndrome.

In spite of the hundreds of boring shoot-'em-ups out there, the general standard of games is going up. And a classic like Elite remains a classic whenever it was written.

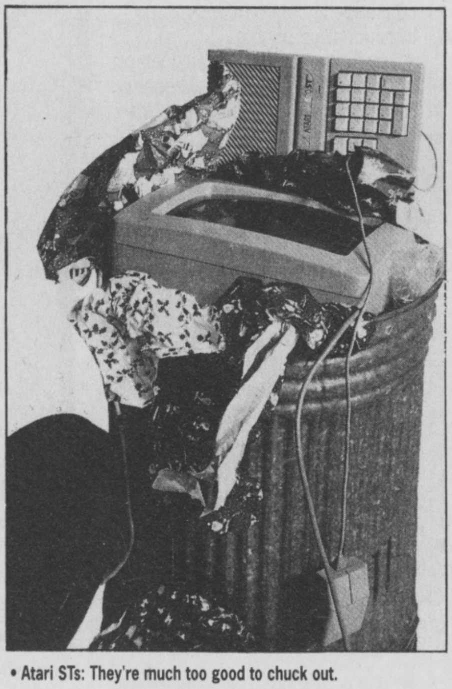
EXPRESS IS SLIPPING

Your mag is super. Well, maybe not quite so super of late. Firstly, without any blaze of glory or fanfare of computerised trumpets, you print the winners of your Christmas competition in some insignificant little spot in the back of this super mag. Could this be because there are only 94 names that I can count? Where are the other six names, and the eight winners who only entered the second part? A matter for the office of Fair Trading maybe? Where are the answers? It would be nice for some of us to at least give ourselves a pat on the back for getting the answers right or at least finding out where we got it wrong.

Secondly, in issue 2 you extol the virtues of the Atari ST being possibly the best buy, yet come issue 9 we see on the front cover the ST unceremoniously dumped in a dustbin, with a big heading asking "Problems With Your Computer?"

Why such a lack of consistency, in this super mag? Does this mean I shall be buying the wrong computer next Saturday? Was it a good choice for first prize in the competition?

I find this super mag very good value for money, covering such a wide spectrum (no pun intended) of topics, but I am beginning to wonder which parts I have to read with a pinch of salt.
John Russell, Cheshunt, Herts


• Atari STs: They're much too good to chuck out.

● ***We published the six missing winners last week. As for putting the ST in the dustbin, well it had to be one machine or another, and we couldn't put in others for a variety of reasons. If we'd put an Amstrad in there we'd have got sued; a PC and our Electronic mailbox would have got jammed with messages from disgusted readers; an Amiga and we'd have had death threats saying how AmigaDOS is actually really fast... but we knew that ST owners would be more sensible about it all.***

Just to prove that everything you read in Express is true, here are some unbelievable, but true facts:
a) Thomas Crapper invented the flush toilet and Thomas Blanket the Witney blanket.
b) Rabbits are not rodents.
c) 'Atari' is a Japanese word and is the equivalent of 'bullseye'.
d) Alcohol does not give you a hangover.
e) Napoleon was really a woman and Elizabeth I was really a man.
f) AmigaDOS is a really good operating system.

CRYSTAL BALLS

In the resurgence of speculation regarding software pricing and piracy, I thought I would make a prediction.

Way back in the heady days of the rubber-keyed 48K Spectrum, the name of the great Ultimate Play The Game was on all ZX lips. It was *the* leading games company and its software, priced at £5.50, second to none.

Imagine the outcry when Ultimate released *Sabre Wulf*, a decent enough game, but at a price of £9.95, almost twice as dear as its predecessor, *Atic Atac*. There wasn't one, save for a couple of disgruntled software reviewers. The general consensus of opinion, though, was that, okay, it's a little dear, but it is Ultimate after all, and it did take six months to write...

At that time I, being of youthful mind and all, ignored the nagging thoughts that warned me of a prospective rise in software to come, and of course I was wrong. For within a further six months *Sabre Wulf*, selling in large quantities, triggered off a chain reaction within the industry, and the price of software rose by at least three pounds. Nowadays you still get very little change out of a tenner for a 'full-price' 8-bit game.

And now I feel exactly the same thing happening again. The compilation packages are the first to weigh in at anything from £12.95 upwards, and although some may argue that 10 games or more for £13 is still good value, it has to be said that very few compilations have games of equally high (or low) value throughout. The question is – would you rather pay £3 extra for games that you'll never play? I think not.

And if you're not convinced by the argument on the compilation front, I have recently seen *Microprose Soccer* on sake for £15 cassette. I admit that in this case there are different types of footy to play, but surely this cannot justify a fiver slapped on. If this policy is carried on throughout the industry, and I'd say there was a strong possibility of this, then a disk-based 8-bit game will damage the pocket as much as the already overpriced ST games. Indeed, at a time when 16-bit games really need to drop a little off their price, an 8-bit surge will hardly be encouraging, will it? I don't know – maybe I'm wrong maybe it's a little paranoia on my behalf. But if it isn't, and if the next crappy Christmas conversion weighs in a £15 a throw, you'll know where you heard it first. You have been warned!
Stephen L Trask, Rochdale

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How to choose your friendly local PC

The PC is still the best general-purpose workhorse computer around. Your local dealers will be full of the different models – but which to choose? "You can't call those Amstrads and the rest of them real computers. Anyone who's serious about computing knows that the only real PC is an IBM PC," they tell you. What's the truth in this, what jobs are PCs good at and what type of PC is best suited to your own work? Simon Williams answers all in the great new* Express *PC survey...

• Tinker, tailor...the PC is a jack-of-all-trades. But which is best for the job you want it to do?

The PC market is the largest and most mind-numbing in the world. There are more PCs per square foot of floor space in Tottenham Court Road than bat droppings in a Devon belfrey. If you're just a simple soul trying to work out the best machine for your use, you need to know how each type and make of machine can help you with your particular work load.

Take these three typical computer users, all thinking of buying a PC, coincidentally in reverse order of big-bucks-for-big-problems:

- Owen Money, the journalist, wants a PC to do word processing on his articles and books – he wants a professional tool.
- Bill Payer, a plumber, wants to smarten up his invoices and do his VAT returns – he wants a home business PC.
- Meg O'Bucks has a small business she wants to computerise – she wants an office PC.

Being a smart lot, they deliberately look at some of the machines which might not come to mind immediately. Amstrad has done the computer world a big favour in bringing PCs to the masses, but there is a certain amount of "I need a PC – better see which Amstrad suits me best" about the market. There are a lot of machines out there, some better in particular circumstances than the Amstrad equivalent.

Face forward

The first point to make, and one which is so often missed that it needs screaming from the rooftops, is *choose your software first*. You must find a program or programs for your particular applications that you are happy with and are sure will be able to do the job you're going to set them. This isn't easy. It will mean trips to dealers to try out the possibles, and this can be very awkward if you live on Lundy or Lindisfarne or somewhere else off the main highways of commerce.

The next best thing, if you can't try the product out for yourself, is to read reviews in the computer press. Although this sounds like banging our own drum, one of the main uses of computer magazines is for readers to gain some idea of products they're thinking of buying. Find a magazine (there are nearly two hundred out there, and a good proportion are devoted to PCs) that most closely meets your interests and which has a coherent and intelligible style.

Contact the software suppliers. In many cases they will have sample versions of programs available for a few pounds with some limit on the functionality. You will also need a friend with a PC prepared to give their machine over to you for a few hours to try it out, but at least you'll know if the product's a dog.

Only when you've established the programs you intend to run should you going hunting a PC to run them on. Look particularly for the memory supplied with the machine, and match it up with the requirements of the software you've selected.

Check also the speed. If the software was just what you wanted when you ran it on your friend's machine, but a bit slow, go for a machine with a faster clock speed or a more powerful processor. If you noticed lack of speed on a few hours trial, you'll certainly notice it when you come to use the software on a regular basis.

It's all just numbers

It's very easy to get bogged down with numbers in the PC buying game. A lot are quoted, but only a few are strictly relevant. Here's a rule of thumb:

8088, 8086, 80286, 80386: these numbers refer to the micro-processor in the PC. The 8088 was the original chip and is pretty slow by today's standards, though should be OK for word processing. The 8086 is a slightly faster version of the same thing. You would normally find one or other of these chips in "XT" machines. The 80286 is the basis for "AT" machines. These are usually up to seven faster than XT models in the same range, though differences in clock speed (see later on) can give some overlap. The top of the range is the 80386 chip which is faster again, by a factor of three over the AT, though again clock speeds can alter things. 80386 PCs are usually referred to as 386s or AT386s – just to add confusion.

Clock speed determines how fast a given PC will run. The speed is normally quoted in MHz, or how many million ticks of the internal clock occur in a second. An XT will normally lie in the range 4.77MHz to 12MHz, an AT between 8MHz and 25MHz and a 386 between 16MHz and 33MHz. There are other factors at work here, though, so you can't necessarily expect a 20MHz AT to work faster than a 16MHz 386.

There are two other figures are often quoted in PC adverts: **Norton SI** and **Landmark** ratings. Both these figures are the result of running specialist programs which "exercise" the PC and give some idea of its true speed in real use. They are best used comparatively, one with another, and without too much reliance placed on them.

The professional tool

Owen Money wants to use his PC as a professional tool to speed his main activity – writing. Maybe the occasional game too, but the main activity will be word processing.

This still doesn't mean that any PC will do. Although most now come with 512K as standard, and this will run most word processors, there are some that are too big, and others that really need a hard disk to do justice to extra features Owen wants such things as spell checkers and thesauruses. Most you can run from a twin floppy drive system, but there are quite a few which won't run happily from a single drive machine, and some, like Microsoft *Word* which demand two.

Word processing doesn't require colour. It may be nice to highlight parts of the text in colour as memory aids, but none of these colours will come out on your printer, and there are some positive advantages to a mono screen. If your machine supports Hercules graphics (not the earlier Mono Display Adaptor (MDA) standard), your word processor will probably be able to show you bold, underlined and italic text on screen. This will reproduce on your printer and could well be an advantage to you.

Most word processors are fast enough to run quite happily on a bottom-of-the-range 8088 or 8086 PC (normally known as an XT), but if you can afford it go for a faster clock rate – 8MHz or above. More important, though, if you have the money and write long documents – novels or text books – try and run to a hard disk. The amount of extra speed and convenience this single item will give you should put it at the top of your list of options.

Machines that should prove more than adequate for this category of work are in the first group in the table. Of these, the Opus and Viglen machines are solid workhorses with a respectable turn of speed and the Amstrad, as always, undercuts them on price. In deciding which to buy, Owen will have to weigh up the "big name" style of Amstrad against the robustness of metal-cased machines not built down to a price.

• The PC can replace that pad

The home business

Like many self-employed people, Bill's main work is not with the computer. However he'll probably want to keep records of the jobs he undertook, with facilities for invoicing and cashing up at the end of each month or VAT quarter. In addition, though, he might want a word processor to make his business letters more presentable and perhaps a spreadsheet to forecast his likely expenses, against which he could then budget.

With this kind of requirement, the PCs in this category will obviously need to do more than the single word processing task and ideally it would be useful to be able to extract information from one application area (say an estimated expenditure for the last part of the year) and insert it into another (a letter to the bank manager asking for a loan to cover the expenditure). With several programs and their associated data on the go at once, the PCs in this category are going to need a bit more power and certainly a lot more disk space. A hard disk will make life a lot easier for Bill, and it's interesting to note that the take-up of hard disk-based machines in the AT class of PCs is something over 80%.

It's difficult to estimate the speed or capacity of machine you need for any given job. One way of having a go is to add up the length of all the programs you intend to run (ring the software suppliers and question them over "code sizes").

• The PC can do the hard work

Under a bushel

Even concentrating as we have on some of the less well known PCs, there are still others which few have heard of, but deserve consideration. The apparent obscurity may be due to the company being new on the scene, not being large enough for huge ads in all the main mags or because it expects its dealer network to do all the selling and doesn't feel it has to advertise.

Into the first category comes Wells American (0494 26211), who have only recently started a UK operation. Their entry level AT machine has a high specification and appears fast. You'll be hard pushed to find the A*Star advertised other than in the company's own literature, though.

Into the second comes Technomatic (01-205 9558), an Edgeware Road computer house which started life in the Age of The BBC Micro and has progressed from there. Its Meta-Dyne 80386-based AT has 2.5 Mbytes of memory and a hard disk for £1,700, which is about rock bottom for a well-endowed power PC.

Into the third category come many of the big names. IBM makes a range of PS/2 machines which use an operating system and expansion boards different from everybody else's (though they're working on that). Olivetti has a range of robust and fairly pricey machines which nonetheless have a very good name in business. Compaq, likewise, has a good reputation, and in many people's eyes is a close second to IBM as a corporate "solid purchase".

Play the game – but not on a PC

"Only a dodo would buy a PC to play games on!" The same dunderhead who issued the statements at the head of this survey would be likely to come up with this kind of quote. It depends a lot on the type of games you like to play and how much you like cyan ('turquoise' in plain English) and magenta (pinky orange) as colours. If you're really into strategic simulations, which map out the whole of world history from the Paleolithic era to 1939, you'll find plenty to entertain you on the PC and need not spend a fortune since most of these games will run happily on a Hercules standard monochrome machine.

If you need something a bit more dynamic in it (that is with bits that move about the screen), then CGA standard graphics will give you something to look at, but at fairly low resolution. You only get four colours with CGA, and those are either cyan, magenta, white and black or red, green, yellow and black, and a good many games writers haven't worked out how to use the second set, yet. Machines like the Schneider Euro PC (0604 766572) and the Sinclair hatchback (PC200 – 0277 262326) can only manage CGA graphics, which is both annoying and ironic as the cheapest machines in a range are normally aimed at the games player.

EGA graphics offer 16 colours from a palette of 64, but again it's usually the same 16 in every game. Among the cheapest EGA-based machines are the Viglen Vig 1 and the Opus PC IV, but both of these cost over £1000. The top of the graphics range, which is respectable in most machine's terms, is VGA, which can use 256 colours from a palette of over 24000. Again you're looking at high prices though.

Writing under our breath, we have to be honest and say that the extra you'll have to pay to play games in anything like decent colour and with anything more than a squeak from the speaker, you'd be much better off buying a PC for the serious stuff and spending the difference on an ST or an Amiga.

• The PC means buisness too

Add to that an estimate of the data you're likely to hold with any application, roughly 3K per A4 page, 150 bytes per name and address on an address list and say 40 bytes per cell in a spreadsheet. Multiply up by the size of each document, datafile or spreadsheet and then double what you get, to allow for expansion. You'll find the disk capacity you chose with these simple rules will last a few years, though it's surprising how fast data grows to fill the available space (possibly a new Parkinson's law).

Of the machines in this category, the cheapest is the Solidisk machine. Solidisk has designed a "select-it-yourself" system, whereby you stipulate the components you want in your machine – size of drives, amount of memory, type of display – and the company assembles and delivers a machine to this specification.

The Advent PC uses a speedy version of the 80286 chip which races along at 20MHz. As with most of the machines in this and the top category, the suppliers have a range of PCs and can sell you a machine to fit most specifications.

Top of the speed stakes in the AT range is a machine like the NTS AT, which can run at up to 25MHz. The NTS machines come as standard with both 5.25" and 3.5" drives. This is becoming increasingly important as there is a continuing swing towards the 3.5" format of drive. The disk is more robust than the original "floppy" and needs no slip sleeve to protect the disk surface. Bill reaches the conclusion that, like his own plumbing services, you get what you pay for.

The office

Meg has real top of the range requirements: her company is flourishing and she has several employees. Here the requirements may not be that different from the home business, but are amplified in size and complexity. Accounts systems will include payroll as well as sales and bought ledgers, there could be a stock control application, and a mailing list will probably be high on the agenda.

It's as well to think of future expansion before making a purchase in this group. If you'll have more than one main user of your PC, it's quite likely that before long you'll want to obtain information from the system in more than one place at once. Under these circumstances, if you've already paid the price and bought a big, powerful 80386-based machine, you can add this facility by buying a couple of terminals (simple computers with little latent processing power or storage) and connecting them to the big machine via a network.

When a computer works in this way it is known as a "file server". This is because the terminals can make use of the file server's hard disk and memory to process their own files. Obviously, if the machine is to do the work of three or more PCs it needs to have a lot of power in reserve. This is why the memory and hard disk is large, the processor fast and the price high.

80386 machines start off quite cheap, the Walters being one of the cheapest available. By the time you've added hard drive and memory to this though, you're butting onto £2000. Increase the speed and add a VGA monitor and you're looking at over £3000.

Meg sees that this is quite an investment for her young expanding business, but concludes it could well prove cheaper in the long term, when the cost of upgrading from a lesser machine is taken into account. ●

Popular PCs at a glance

AMSTRAD PC 1640 DDMD

Memory supplied (K)	640
Display Type	Hercules mono
Processor type	8086
Quoted speed (MHz)	8
Drive types	2 x 5.25" floppy
Price (typical)	(£554 ex VAT) (£637 inc VAT)
Phone Number	0277 262326

Notes: *Huge range, of machines. One of few Companies to offer twin floppy PCs still.*

VIGLEN VIG 1

Memory supplied (K)	640
Display type	Hercules mono
Processor type	V20 (like 8088)
Quoted speed (MHz)	12
Drive types	1 x 5.25" floppy 1 x 30Mb hard
Price inc appropriate monitor	(£789 ex VAT) (£907 inc VAT)
Phone Number	01-843 9903

Notes: *EGA and VGA versions also available, as are AT and 386 PCs*

OPUS PC IV

Memory supplied (K)	768
Display type	EGA
Processor type	8088
Quoted speed (MHz)	10
Drive types	1 x 5.25" floppy 1 x 20Mb hard
Price inc appropriate monitor	(£995 ex VAT) (£1144 inc VAT)
Phone Number	0737 765080

Notes: *One of a range of XT, AT and 386 PCs from Opus.*

SOLIDISK AT

Memory supplied (K)	512
Display type	Hercules mono
Processor type	80286
Quoted speed (MHz)	12
Drive types	1 x 5.25" floppy 1 x 40Mb hard
Price inc appropriate monitor	(£1002 ex VAT) (£1152 inc VAT)
Phone Number	0702 354674

Notes: *Wide range of "you-configure-it" options when you buy*

ADVENT PC AT-12

Memory supplied (K)	1000
Display type	Hercules mono
Processor type	80286
Quoted speed (MHz)	20
Drive types	1 x 5.25" floppy 1 x 40Mb hard
Price inc appropriate monitor	(£1595 ex VAT) (£1834 inc VAT)
Phone Number	01-688 2654

Notes: *One of a range of XT and AT PCs. EGA also available.*

NTS NEAT 286-25

Memory supplied (K)	1000
Display type	VGA mono
Processor type	80286
Quoted speed (MHz)	25
Drive types	1 x 5.25" floppy 1 x 3.5" floppy 1 x 65Mb hard
Price inc appropriate monitor	(£1899 ex VAT) (£2184 inc VAT)
Phone Number	01-538 2023

Notes: *One of a range of highly specified ATs and 386s.*

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Computer crimes

Hacking – 'breaking into other people's computer systems and getting unauthorised access to their data – is fast emerging as Computer Crime No.1. But, argues Stephen Cogan, the sloppy security of the hackers' targets are making things too easy...

Hysteria has already swept through the professional world and the press about the dreaded and mysterious hacker. It's inconceivable to many that a computerised youngster can start pressing buttons and end up with virtually all of NATO's secrets at his disposal. Now the law is cracking down hard on something which it finds difficult to pigeonhole and interpret.

Many have been horrified at the implications. American computer fraudster Kevin Mitnick recently faced a judge who recommended a fine of $750,000 along with a twenty year stint inside. However, to introduce legislation against hacking without first putting the onus on system owners to tighten security is pointless.

Of course people who spend their time destroying data should be punished. But perhaps "services to the computer world" should be taken into account; some good does come out of hacking. Typically, one hacker makes it his business to find out all the loopholes, say in an ICL system. When he has completed his mission he can get into every part of it. He leaves a message on the system detailing a lot of the loopholes and, not surprisingly, the owners find this all very interesting and take note.

The hacker doesn't inform them of all the loopholes, just enough to give an indication of just how lax their system is. They have been given a lead and it is up to them to follow it through and tidy up the system. A few weeks later he tries one of the unmentioned loopholes and succeeds in getting in. This happens far too often for comfort, but hardly ever are the loopholes exposed by the hackers tightened up.

Ticket to ride

Before authorities start to introduce legislation about hacking they should be contemplating tightening up many of the country's systems — many of which are an open invitation to hackers.

In the opinion of many hackers one example of lax security is the network Fastrak. It incorporates travel agents, tele-banks and other agencies. To start off, it doesn't ask for any password. In fact it is extremely user friendly listing all the companies you can access. All this is very convenient for an unauthorised user – and it gets worse.

One screen allows you to register as a travel agent. Once done anyone can proceed to read information about how to fill out certain tickets. All good stuff for anyone thinking of dabbling in fraud. One network which has been used in various hacking escapades is the Joint Academic Network (JANET) which has virtually no security. There are PADs (a local terminal which you can use to access the network) which don't ask for any password or form of identification. From these you can dial into universities and other such institutions.

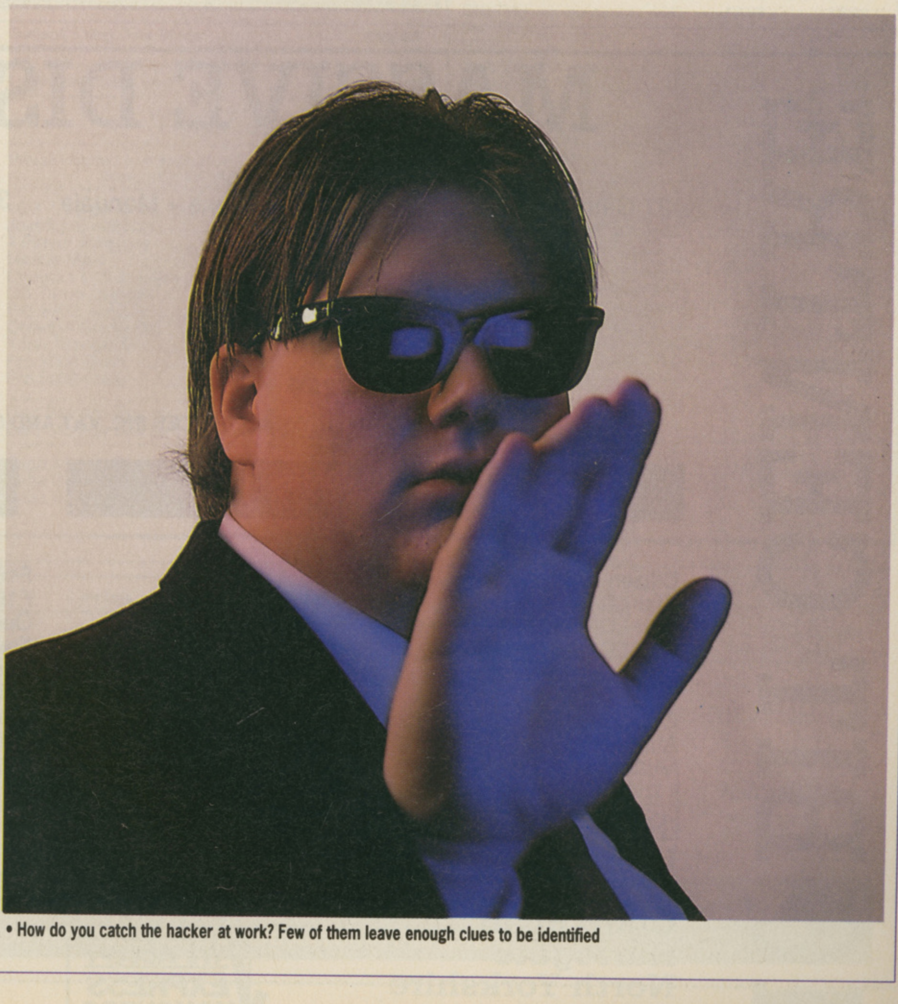
There are also gateways from JANET into PSS which is a British Telecom network and which in turn has worldwide outlets. PSS carries such addresses as atomic research establishments,

How they do it

Hackers don't actually need that many special tools or great specialist knowledge. The basic equipment is just a computer and a modem to connect it to the phone socket. Then it's just a question of dialling up the telephone number of the computer you wish to hack into and giving the right password at the welcome screen when it shows up. Passwords are notoriously easy to guess – the company chairman's first name, for example. And special programs can keep trying a list of passwords for the hacker, or try random combinations, until the right one is arrived at.

Once inside the institution's computer system the hacker has access to data on the same level as if he had a free run around the filing cabinets of the head office: names, addresses, salaries, personal communications, financial records and so on. The hacker might even be able to remove or alter some of the data.

Hacking is not a crime; destroying computer data may be. There has never been a test case.



• How do you catch the hacker at work? Few of them leave enough clues to be identified

☞

NASA jet propulsion labs, the European Space Agency and an observatory in Hawaii. Many of the addresses are of a very sensitive nature but are available to any hacker who wants to find out. Imagine the damage caused by someone who got into NASA's labs and scrambled even a small amount of data, or worse, in atomic research labs.

It's even said that someone got inside the section of the NASA computer that dealt with the redesign of the space shuttle and inverted the logo on the side of the craft.

One data security expert admitted to me that hackers had found a way round the supposedly secure method of ring back terminals. These are those which, when you dial the central computer and identify yourself, it rings the place you are authorised to phone from. This is designed to stop unauthorised entry because you shouldn't be able to get into the computer unless you were using an authorised terminal. A program is available which will get around this security feature though and is already being passed around hacking circles.

A new system called Secure Communications Processor 2 which has been adopted by the Ministry of Defence has recently been attracting attention. The SCP2 features dial back modems as part of its array of security devices – to no avail, as hackers have found a way round it.

Catch me if you can...

John Dale of the British Association of Computer Clubs compares hacking to burglary: "Having your security breached is like having your home violated". Catching every hacker would be impractical since their methods of evasion are so complex.

When security has been bypassed the organisation affected tends to play ostrich and ignore what has happened. I know a hacker who slipped into the Leeds Permanent Building Society's computer system. He could have tried his hand at fraud but being an honest sort he left messages telling of how lax the system was. He tried again a few months later and they hadn't done a thing about it.

By contrast, British Telecom pulled all the stops out in order to get the infamous Steve Gold and Robert Schifreen behind bars, who broke into Prince Phillip's Prestel mailbox and had access to all his private mail. Schifreen commented: 'You can make an unhackable computer. You just don't store any data on it, you lock it in a room without a phone in it, and you throw away the key.'

To legislate against hacking when the UK computer networks are in such a bad state would be pointless, especially given the negligible chances of actually catching hackers. There is no evidence that legislation will deter hackers. No sign of a halt has been detected in the US, despite huge fines and long sentences imposed on hackers there. And, if hacking were to become a criminal offence in the UK, the practice would be elevated even higher attracting even more people to try their hand. ●

Mickey Mouse phones

Though the basics are just a micro and a modem, every hacker has software which makes their activities easier. The most popular is the Mickey Dialler, which is American in origin and has a number of very special features.

It can avoid being traced by having a bank of false telephone numbers which it can transmit to throw the tracer off the scent. You can even input other people's numbers to be sent down the line when needed. It can 'war dial', which is dialling around a voice number until it finds a computer number. And it can continuously dial a number and send either a random password or a sequential one.

'Phreaking' is something which can be dome with the aid of a Mickey Dialler. In America, instead of directly dialling long distance numbers you dial a local number and then your personal code which will bill you for the call.

Then you dial the long distance number. What phreaking does is this: when you enter the first half of the local number it dials different combinations of the second half of the code until it finds someone else's personal code. With this you can make as many calls as you like and not be charged for it. As a direct result of this one unfortunate chap in the States received an itemised bill 2,578 pages long with an accompanying charge of $109,000.

This has some relevance here in the UK as Mercury operates a system similar to the long distance services in America. It's possible to do the same here.

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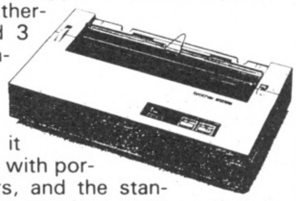

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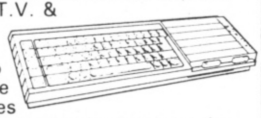

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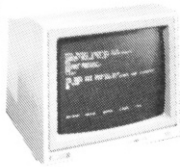

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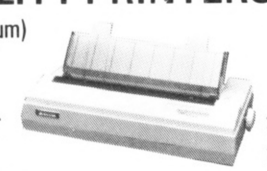

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Spreading your wings

A spreadsheet, as anyone will tell you, is probably the single most useful piece of software a business can possess. But what is it? Why is it useful? Peter Worlock concludes his Beginners series

The third of the "Big Three" computer applications – together with word processing and database – is the spreadsheet. Between them, these applications account for most of the software bought for use with personal computers.

It was a spreadsheet – *Visicalc* running on the Apple II – that convinced a lot of sceptics that personal computers were more than curiosities for electronics freaks, and it was another spreadsheet – *Lotus 1-2-3* – that caused the IBM PC to take off. *Lotus 1-2-3* has probably been the biggest-selling program in the world for the last few years.

• "Anyone thinking about setting up their own business should think about using a spreadsheet"

If you've never worked with computers in business you may not know what a spreadsheet is. If you've heard of spreadsheets but never used one, you might think that it's just a tool for corporate accountants.

But the spreadsheet has a far wider range of applications than acting as a glorified calculator.

The works

Let's start by looking at how the spreadsheet works. Imagine a grid of boxes or cells; in the more powerful programs there can be up to 256 columns of cells and thousands of rows. Anyone who's done a bit of programming can think of the spreadsheet as a huge array.

By convention, the vertical columns are referenced by letter, A to Z and then either AA to ZZ or A1 to Z1 and so on. The rows are referenced by number, 1 to perhaps 4,096. So at one level you can think of a spreadsheet as an enormous sheet of paper covered in boxes, and the computer's display acts as a window onto this sheet showing only a small part of the whole.

In the arrays familiar to Basic and Pascal programmers, each cell of the array can hold either a number or a character string, and this is true of the cells in a spreadsheet. But that's as far as the similarities go.

Because the cells of a spreadsheet can hold other values, notably formulae. At the lowest level such formulae can be the simplest mathematical operators for addition, subtraction, multiplication and division. So cell A3 could hold the formula =(A1+A2), which means "put the result of A1+A2 in A3". In other words, A3 contains both the result of the addition, and the formula which provides the result.

But formulae can be more complex than this. Suppose that the first nine cells in column A hold the number values of the salaries for nine employees. The tenth can hold the mathematical formula to total the preceding nine which will usually take the form =SUM(A1:A9).

Now cell A10 contains both the formula that adds up the preceding nine cells, and the total – the sum of the nine cells.

Spreadsheets differ in the number and kind of formulae they provide, but most include functions for totalling a range of values, statistical functions such as calculating means, medians and standard deviations, financial functions for calculating fixed and compound interest, depreciation and so on.

Countless calculations

At this point it looks as though the spreadsheet is just a complex multi-function calculator, but we're just getting started. For example, spreadsheets allow you to use labels for values. In the example above of the nine employees, your spreadsheet might allow you to label the total of the nine salaries "Total salaries".

In other cells you could put in the company's contributions to pension schemes and national insurance which will be based on a percentage of each employee's salary. Now using labels and more cells, you can create an integrated formula that calculates the company's total payroll cost, but because of the use of labels this will be more readable than a strict mathematical equation: Total Payroll = Total Salaries + NI + Pensions.

In similar fashion, in another part of the spreadsheet you could do the same for the company's overheads – building rent and electricity, for example – and again for manufacturing costs, and for sales performance. Quite quickly you've built up a picture of the different parts of the company's finances.

The spreadsheet allows you to link all of these different parts into a whole. You'll often see spreadsheets referred to as "financial modelling" software and this is because, as in our example, the spreadsheet now represents a model of the company in numbers.

Finally comes the clever bit. Every cell in your spreadsheet is linked with its related cells by the formulae you've specified and these links are dynamic. Now you can play "what if..." with your model: what if you give the employees a 5% pay rise – how does that affect the overall profitability of the company? What if your sales force could increase sales by one or two per cent – do you have the staff and production capacity to meet the orders? The money to buy the necessary components? The storage space to hold the incoming parts and the outgoing products?

By changing one value anywhere on the spreadsheet, you can see the changes more or less instantly as the program recalculates the values that depend on that original number, and the other values that depend on the secondary values – and so on, throughout the whole model.

What's more, when you've examined the results you can return the model to its original state either by re-loading the original from disk or by simply changing the seed cell back to its original value. The whole process might take only a few minutes.

It should be apparent that the spreadsheet allows you to perform calculations of incredible complexity – calculations that would be impossible or too time-consuming to do in any other way.

Many of the more sophisticated products provide extra features, the two most common of which are macros and graphics.

Although many kinds of software offer a macro facility, these programs usually work with what are more accurately called "keyboard macros" which act like a kind of recorder. What they record is keypresses (and sometimes mouse movements) which can then be replayed – look no hands!

Spreadsheets often support keyboard macros too, but more often than not spreadsheet macros are more akin to user-definable functions and commands. So you might create a macro that automatically adds VAT to all purchase costs, or

The options

There is a natural tendency, thanks to their links with high-powered corporate users, to think of spreadsheets as very expensive programs but that isn't necessarily the case. The market leaders are certainly expensive – *Lotus 1-2-3* is £265, *Excel* £315, and *Supercalc 5* £385 – but there are many cheaper alternatives.

On the PC some of the cheapest ways into spreadsheeting are through the better integrated software packages. Both *Ability* and *First Framework* (about £70 each) include good spreadsheet modules. There are also good spreadsheets in the shareware market: *As Easy As* and *PC Calc+* are worth checking out.

The Amiga has two good offerings that are reasonable value for money: *Maxiplan 500* and *VIP Professional* (about £90 each), while the Atari ST has *VIP Professional* (£120) and *Logistix* (£90).

The 8-bit machines like the Spectrum and C64 are not good for spreadsheets simply because of the limited screen size (you don't get much on an 80-column PC display so 40-columns and under is very cramped) but there are products available: try Database's *Mini Office* (between £10 and £30 in various formats) which includes a good introductory spreadsheet.

converts feet to centimetres – or any other numerical manipulation that you commonly use.

It's possible to use macros as a complete programming language, and you can find entire applications written in *1-2-3* macros.

Graphics also tend to have a special meaning in spreadsheets. Although to most of us "graphics" might mean paint programs or, more generally, any kind of computer display, in spreadsheets the term applies specifically to business graphics – bar charts, line and scatter graphs, pie charts.

The facility to chart the numerical output from a spreadsheet is an obvious and useful one: it's always easier to spot trends and oddities when results are presented in pictorial form than in rows and rows of numbers.

Hobbies and leisure

From this brief dip into the power of the spreadsheet you can see why companies jumped on this kind of program as a useful tool for handling corporate finance.

The spreadsheet is like a dedicated programming language for dealing with numbers and calculations but it doesn't require any programming experience. You can create a complex spreadsheet simply by thinking in terms familiar to any business person: take all these numbers and produce a total called "Payroll", take all these other numbers and produce a total called "Costs", do the same for "Sales Performance", and another for "Government Interference" and so on. Combine everything into a simple number called "Profit or Loss".

But while business finance may be the mainstay of spreadsheet use, it's a long way from being the only one. Many individuals with a personal computer at home could use a spreadsheet to perform tasks that are otherwise off-putting in their complexity and without the need to buy specialist software that will probably be more expensive.

Some examples:

- The amateur astronomer might make extensive use of a spreadsheet in many aspects of the hobby: calculating eclipses, conjunctions, oppositions; translating distances (what is 11 light years in parsecs?); estimating photographic exposure times allowing for film speed and reciprocity failure.
- The secretary of a golf club could use a spreadsheet model to track members' handicaps – in fact, there are many applications in amateur sport: cricket scoring, league table management, producing fixture lists.
- Private pilots could use a spreadsheet to calculate fuel consumption and flight range, as well as in navigation.
- Anyone thinking about setting up their own business should think about using a spreadsheet to produce a business plan and profit and loss forecast. This can quickly and easily show you whether it's worth proceeding and where the problems are.
- Wargamers could save a lot of hassle by using spreadsheet models to handle all those complex calculations in combat tables.
- Students can find a range of applications for spreadsheets in a variety of subjects outside the obvious areas of business studies and accountancy: biologists can use them to model populations, physicists and chemists to model complex systems, engineers to handle complex calculations.

In many of these cases, you could arrive at the answer with pencil, paper and a calculator. But with the calculator you have to enter every number every time you want to perform a calculation. With the spreadsheet you create a permanent record of constant values and their relationships with each other...all you have to change is the variables.

In all of these cases the problems could be solved by writing dedicated programs in a standard language, but even in an easy language like Basic the task of writing the program will create as many problems as those it attempts to solve. The spreadsheet will be quicker and easier to set up, and can be much more easily modified than a computer program. ●

Technobabble A weekly assault on computer jargon

Spreadsheets

Cell
The basic unit of the spreadsheet – the spreadsheet itself is simply a grid of cells.

Formula
Usually a mathematical, statistical or financial equation which operates on the values contained in other cells. The more powerful spreadsheets offer extended formulae including database-type features like Sort and Search, the ability to look-up values from a range of cells, and others including time and date functions.

Label
A name that can be assigned to a value, or to a cell. Labels make formulae – and entire spreadsheets – more readable and more easily understood. For example, defining January's profit as"JanSales-JanCosts" makes more sense than "SUM(C2:C4)-SUM(D2:D4)".

Range
A rectangular group of cells usually specified by the top-left and bottom-right corners as in A1:A9 or A1:ZZ4096. Different spreadsheets use different forms of reference including A1..A9 and A1,A9.

Value
What you put into a cell for the formulae to work on – usually numbers but can be other forms such as boolean values (true or false) or dates.

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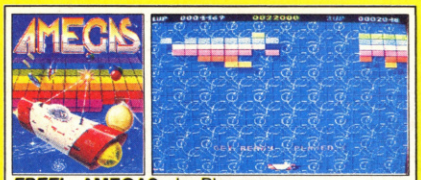

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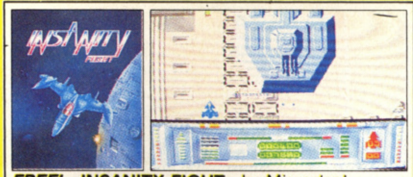

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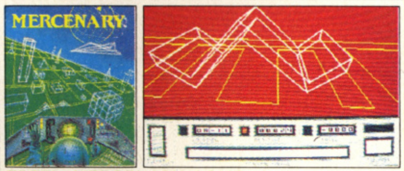

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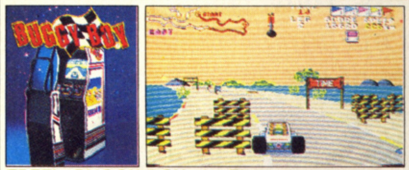

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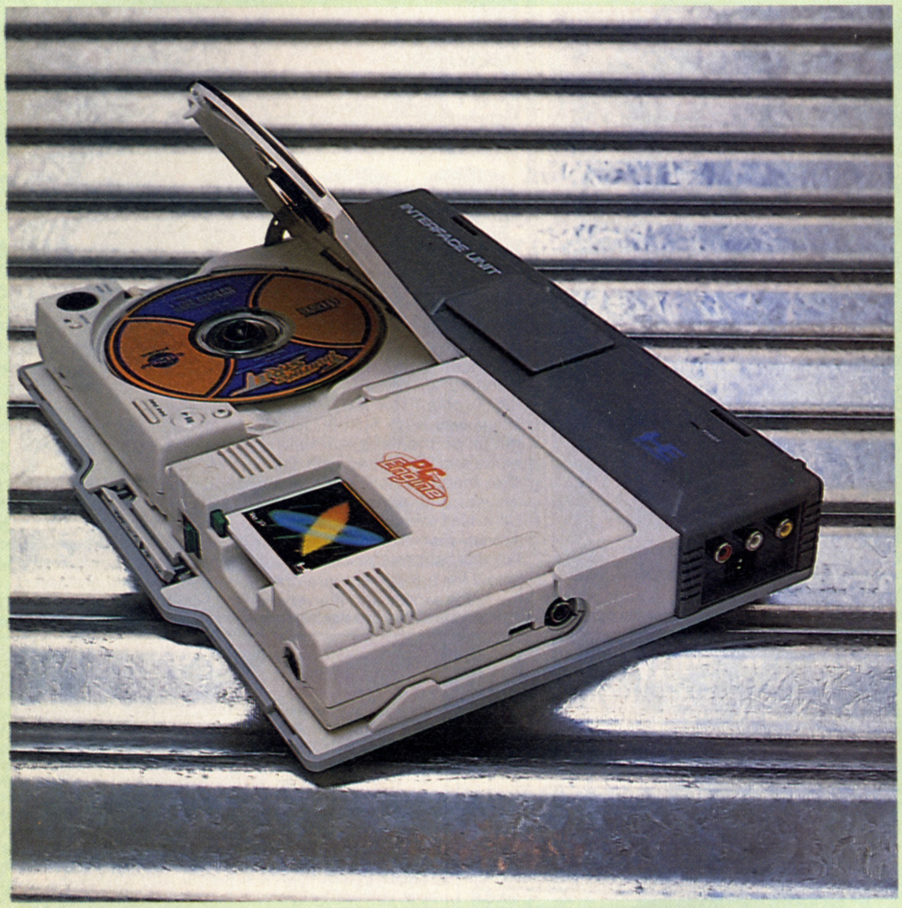


With the recent appearance of the Sega Megadrive and the Konix, the war between consoles will shortly be fought on our shores. Tony Takoushi has laid his hands on another piece of hot Japanese hardware straight from Tokyo – the PC Engine CD ROM. Andy Storer helped him empty the courier's carry-all and took a look at the latest in the future of entertainment.

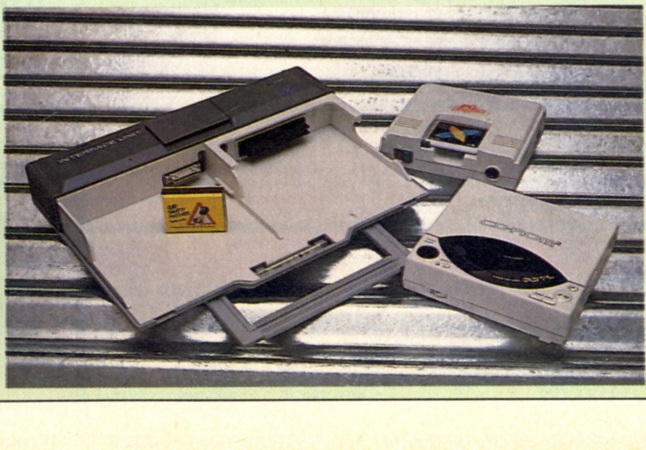
It seems that every console hardware release in Japan is met with something approaching mass hysteria. When NEC's PC Engine saw the yellow light of day in late '87, half a million were sold in the first month. Despite such sales, there were doubts it could compete against the likes of Sega and Nintendo, but now there are 21 games available for the Engine its future is more assured. Just to make sure, NEC has brought out a 540 Megabyte CD ROM drive to push the possibilities further.

The CD ROM Drive fits along with the Engine into a small 12 x 9 x 2 inch briefcase. There's a standard CD interface linking them to each other and all the other compatibility is taken care of by a an operating system which comes on a card you fit into the Engine's software slot. CD software comes on the standard hi-fi size CD disks.

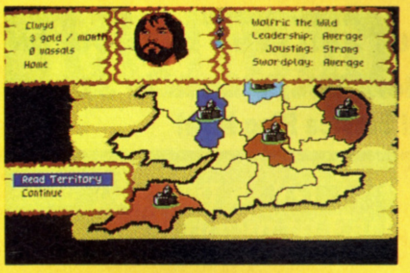
The great thing about the unit is the fact that you can unplug the CD from the housing, hook it into your hi-fi and play it as a straight CD. It's identical in size and appearance to the natty Sony portable CDs you can pick up in high-street

• Above and lower right – the CD ROM player and PC Engine fit in a slimline briefcase with all the interfacing contained in the case bottom.

• Left – the standard PC Engine unit with joypad.

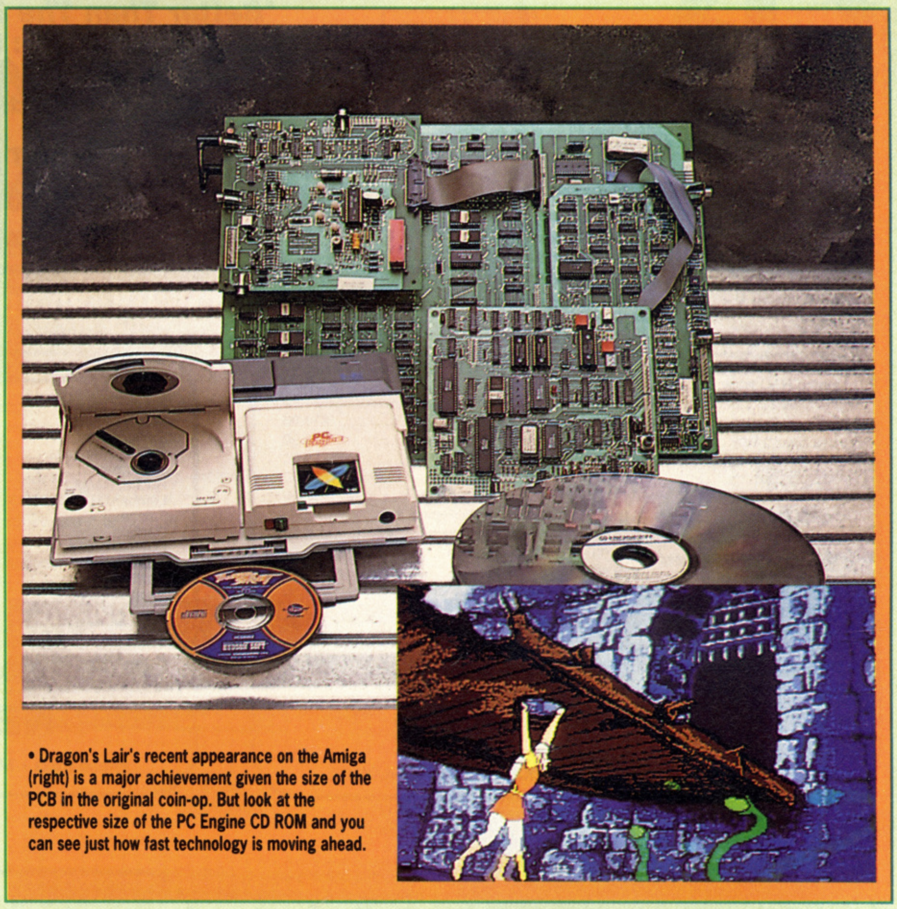


CD Defender



After three months development work, Californian software company Cinemaware has produced a PC CD ROM version of the ace Amiga hit *Defender of the Crown.* This medieval arcade adventure has been used as a testbed for the emerging technology with significant enhancements in music, sound-effects and digitised speech. The stereophonic soundtrack is fully orchestrated and text windows have been wholly replaced by a narrator speaking in Ye Olde English – an inclusion which will no doubt go down a storm in the States.

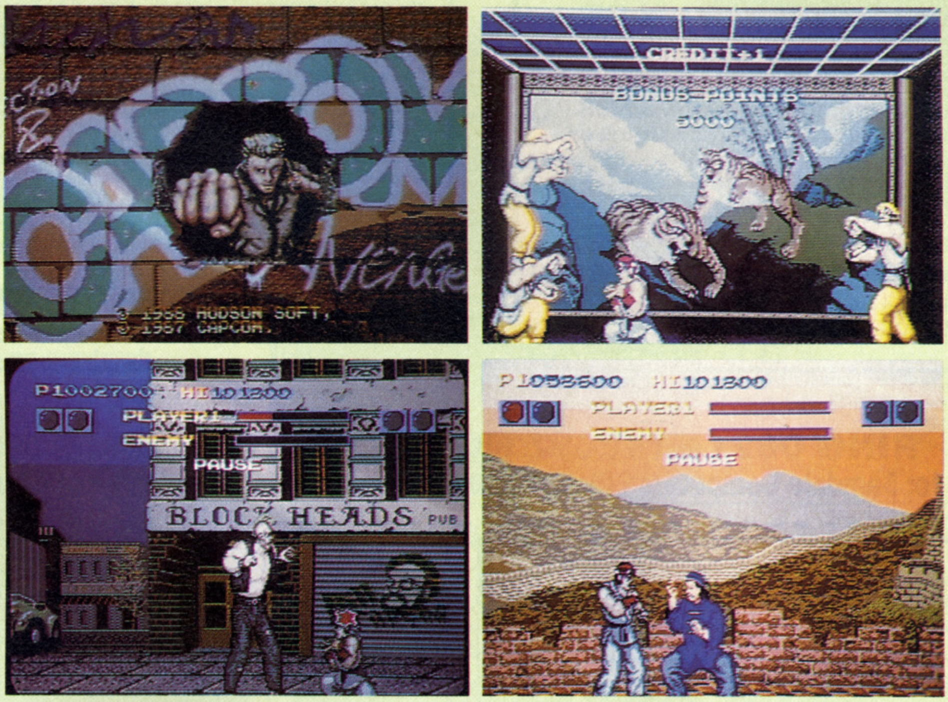
Running under PC EGA graphics, the CD software drivers are present on the CD disc itself and as such allow any CD player with a PC interface to be used. At present there are some 110,000 PC CD ROM units worldwide so the market's still at a fledgling stage. Cinemaware is hoping that now it has sorted out the methodology there'll be sufficient interest in and demand for the product to allow it to realise their original goal of supplying interactive movies for home computers. CD ROM *Defender of the Crown* will be released in February and sell for £49.95.



• Dragon's Lair's recent appearance on the Amiga (right) is a major achievement given the size of the PCB in the original coin-op. But look at the respective size of the PC Engine CD ROM and you can see just how fast technology is moving ahead.

stores. Selling for around £300, this alone is a reason for buying one since the CD spec is a good one – it's not some cheapo cheapo model. And for that £300 you get the interface, the system logic card and a game bundled in too. Throw in an Engine – which you can pick up for around £175 with monitor – and you have a games machine with the equivalent storage capacity of 1,000 520 STs.

Great. But so what? Why does anyone need 540 Megs of storage ? At present the only application is audio. With half a gigabyte or so you will be able to store masses of top quality stereo sound plus high sample rate digitised speech and spot-effects.



• A selection of shots from the first ever game available on CD ROM – a conversion of Capcom's coin-op, Street Fighter. Not a particularly stunning debut but then neither was Al Jolson's.

NEC has gone for *Street Fighter* as the first release to herald their new technology – which seems a surprising choice since it's a Capcom title – but there's no doubt that, graphics aside, the game shows off the unit's audio possibilities admirably. There are at least ten different music tracks to accompany each of your opponents and a variety of digitised speech in this kick-em-up, but the visuals aren't anything really special. This is not due to the graphics hardware in the Engine – it's all custom chips – it's just the seen-it-all-before style of the game. The CD ROM disc is just a data storage device and the applications are no better or worse than those loaded from a traditional floppy disk. Graphics, speed and animation are only as good as the computer to which the CD drive is attached.

Apparently there's another release available in Japan – *Noriko* – an adventure we weren't able to get a glimpse of. But as with all new machines, it'll take a while for graphics and gameplay to make their mark.

After all, with that amount of memory at your disposal you could spend a lifetime wondering how to fill it. ●

NEC tech spec

The Engine comes with a choice of small and large rapid-fire joystick units, a multi-unit allowing four people to play simultaneously and a VA Booster to let you push its signals through your hi-fi and monitor. There are also printer-link-ups and plans to release a portable version.

● Resolution	320 x 256 pixels
● Palette	512 colours
● Display	TV or monitor
● Sound	6 channel

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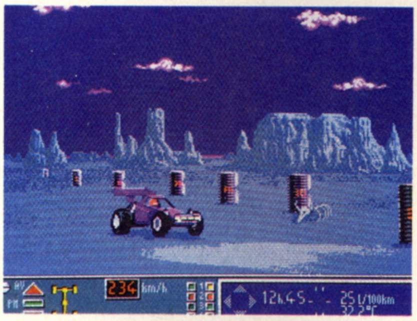
Godness gracious

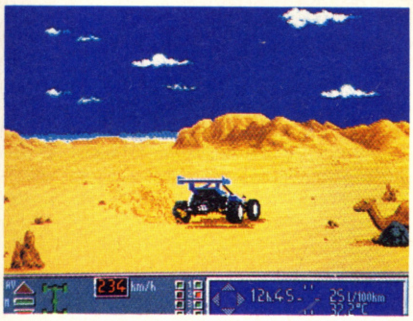
After playing a god in Populous, *Rik Haynes has to come back down to Earth*

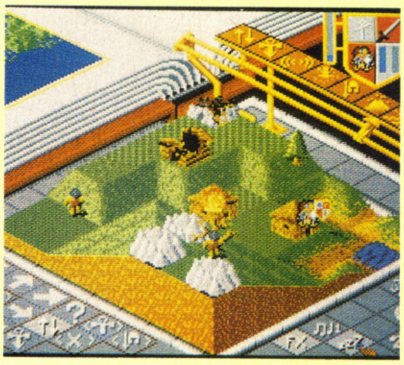
DAKAR 89 COKTEL VISION

Here you're taking on the dangers and pitfalls of racing in the Sahara Desert. It's fortunate that you've got a four-wheeled all-terrain vehicle to negotiate this, one of the world's toughest races, in this French-sourced driving-sim.

Not much else to say, except there's an open desert ahead, and a noticeable lack of Sunday drivers – so you're going to have to depend entirely on your driving skills to get you to the finish line. Out soon on ST and Amiga.





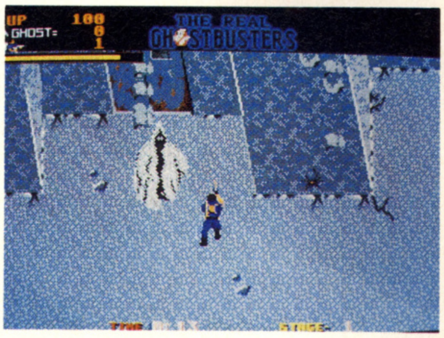


POPULOUS ELECTRONIC ARTS

Populous is a totally original game concept from a development group called Bullfrog – the same team which wrote *Fusion*. The scenario concerns itself with a world undergoing a conflict between two nations – one good, one evil. As the god of one of these nations you must try to triumph over the opposition by any means possible, including ravaging the lands with earthquakes, volcanoes and floods. However, divine power is not increased by destruction alone – you must also mould the lands to aid your population in the building of settlements and cities. Nobody said playing a god would be easy! As an added bonus *Populous* can be played head-to-head against a friend with another Amiga or ST via datalink. Amiga *Populous* should be here next month, with the ST version following in April.

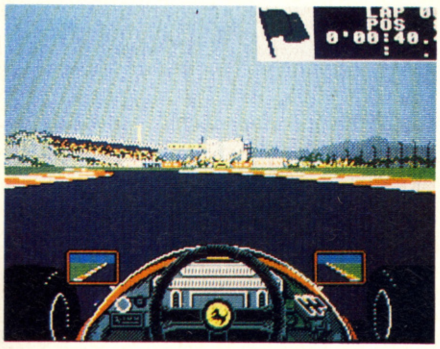
REAL GHOSTBUSTERS
ACTIVISION

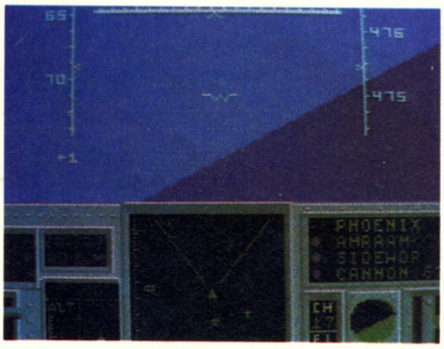
You've read the comics, you've played with the toys, you've seen the cartoon series on TV. Now you can play the computer game, thanks to Activision converting the Data East *Real Ghostbusters* coin-op to home micro format. Ghostbusting makes you feel good, as you waste the hordes of ghosts and ghoulies that have invaded your fair city in this 12-level, multi-directional scrolling shoot-em-up. Fortunately help can be found in the form of "Slimer" – the only friendly ghostie in town – who'll aide your travels through the maze of graveyards and haunted swamps in your quest to kick ghost-ass. *Real Ghostbusters* should be released next month on Spectrum, C64, CPC, ST and Amiga formats.



FERRARI FORMULA ONE
ELECTRONIC ARTS

Ferrari Formula One, the popular driving simulation on the Amiga, is due for an appearance on other micro formats soon. The game is centred around racing a Ferrari F1/86 through all the 16 tracks of the 1986 season – including Brands Hatch, Monaco and Detroit. Each track contains authentic background scenery, weather conditions and track length. The opposition is made up of eight of the world's driving elite – so don't expect it to be a free ride. During play you not only race the car, but also manage the team behind it – so your ability both on- and off-the-track will determine your chances as World Champion. *Ferrari Formula One* should be available next month on ST – with Spectrum, C64, CPC and PC versions following after that.



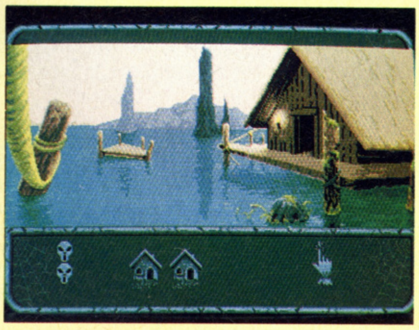


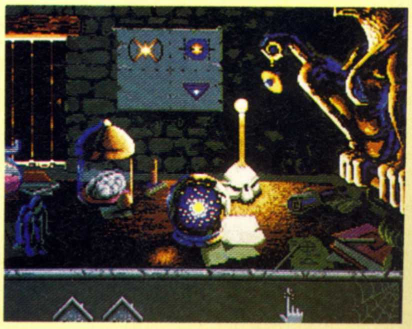
F-14 TOMCAT ACTIVISION

F-14 Tomcat places you in the hotseat of a "Top Gun" naval fighter pilot, charting your career from Whiting NAS in Florida to Miramar NAS in California. This simulation not only takes in all the training programmes but also allows the choice of 80 randomly assigned missions covering five theatres of action, including the Persian Gulf, Korea and even the dreaded Libya. So if you think you're made of the right stuff, *F-14 Tomcat* could be just the right flight-sim for you. Due for release later this month on C64.

THE LEGEND OF DJEL COKTEL VISION

The Legend of Djel is an adventure game based in the Middle Ages, where you're able to choose one of a possible four imaginary kingdoms to live in. Each kingdom has its own particular set of troubles such as famine, plagues, etc. and your quest will involve searching the lands for a cure to each kingdom's particular problem. Available shortly on ST and Amiga.





● An odd mixture this week, ranging from the wargamming epic *Borodino* to the less than inspiring *Andes Attack*.

Overall, we've been somewhat depressed at the multitude of below average releases. Let's hope there's a blue sky on the horizon... or at least a decent game!

BORODINO

GREAT GAMEPLAY

ATARI

ST • £29.99dk
Out on PC and Amiga(!) soon

First off in Atari UK's *Battlescape* series of war games comes this simulation of the crucial conflict centred on Borodino in September 1812. Napoleon was on the long march to Moscow, some 70 miles east, and the Russian army had decided enough was enough and prepared to take him on. 300,000 men fought for 2 days. 100,000 died. The French 'won' and continued towards Moscow.

● GAMEPLAY

The major innovation in the gaming system is the introduction of a chain of command such that you as Commander-in-Chief pass messages to your Generals who in turn instruct others to enact them. This leads to a realism in the amount of time involved in any manoeuvre – if you make a mistake you can't simply recall your troops, for in the fifteen minutes or so it will have taken for the command to have been delivered they could have all been wiped out.

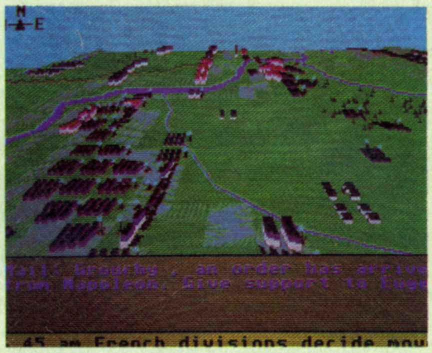
You can either play another person or your computer and give up to eight orders in every fifteen-minute turn. As a beginner you will probably choose to view the entire battlefield from all directions but as your command becomes more competent you can turn this feature off and rely solely on a single view and incoming reports.

A player can see up to two miles of a battlefield of 30 square miles and issue orders for action to take place regardless of viewpoint. Orders are entered in English in a command-line bottom screen, and it's surprisingly easy to input quite complex sentences. The parser will correct mistakes by highlighting offending grammar before the input is interpreted. Therefore, there are no annoying retypes involved in sentences such as "Davout, form an attack line from 1/2 mile southeast of Shevardino linking with Ney, to 1/2 mile southeast of the Redan linking with Poniatovski." Along with lines such as "Montbrun, at 1.30 pm change your role to stand-by" and "Grouchy, at 7 am transfer your artillery to Eugene" you have a dynamic system allowing for the complex interactions essential in war gaming scenarios.

● GRAPHICS AND SOUND

Screen updates aren't spectacularly fast, but this is no real surprise considering the amount of filled vectors involved.

Your unit strengths are depicted by 3D depth, with combat depicted by the puffs of artillery fire. There are no sound effects at all. The screen detail is more than adequate to give a clear picture of the proceedings and the use of a 'telescope' function to focus in on a particular item of interest for an intelligence report most welcome.



```
Mail: Grouchy , an order has arrive
from Napoleon. Give support to Euge
45 am French divisions decide mov
```

• Great graphics and in-depth innovative gameplay

Orders, updates and reports are all shown by text windows displayed bottom screen. A useful inclusion is a laminated fold-out map of the battlefield .

● OTHER VERSIONS

PC and Amiga versions are due for completion any day now.

● EXPRESS VERDICT

An excellent simulator showing great care, attention to detail and employing a friendly parser system. Scoring high in both presentation and gameplay, we look forward to receiving the next addition to the *Battlescape* series – a simulation of the the fated Spanish Armada.

✪ ✪ ✪ ✪

Andy Storer

TRACKSUIT MANAGER

AGAIN AGAIN/GOLIATH

Amiga • £19.99dk
Also on Spec, C64, ST

Yet another football strategy offering – this time with the onus on international success. Goliath shocked the football frenzied world last year with this, staging an impressive challenge against the mighty *Football Manager II* in chartsville. It's Again Again though which has taken on the task of bringing the game to the 16-bit world.

● GAMEPLAY

It's all standard fare. You have to manage a European international side and try and win lots of cups and silverware for the folks back home. It's possible to choose any team, all of which come with the cream of modern day players. England managers are offered a fine selection of the mainstream and less well known.

All that needs to be done is a lot of picking players and changing tactics and studying facts, figures and form. Simple tactics can be applied to each player – defenders can be instructed to tackle aggressively or take it easy, for example. Friendly matches or even tours can be arranged in between the rough and tumble of competitive soccer.

Just to make it as lifelike as possible, Goliath has thrown in mock ups of the next day's newspaper headlines after all your matches. None of them are as stiff as the motifs poor Bobby Robson has to live with.

● GRAPHICS AND SOUND

Er...There aren't any. The matches are played via a rolling commentary and a simple moving bar which indicates where the main play is on the pitch. The programmers obviously didn't see the need for pretty pictures – even the title screen is poor.

● OTHER VERSIONS

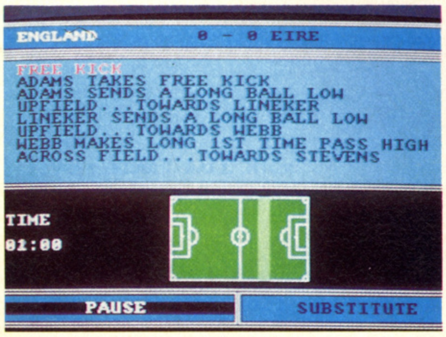
Spectrum and C64 version have been out for some months. The game is also available for the ST with PC and CPC versions promised shortly. The differences between all we've seen are minimal.

● EXPRESS VERDICT

State of the art this is not. Tracksuit Manager's presentation is shabby and entirely unimpressive. It's jam packed though with tons of information, all of which needs to be analysed closely. Budding international managers have already voted for it with their money on other versions but if footie's not your game, stay well clear.

✪

John McCleary



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ENGLAND          0 - 0 EIRE
FREE KICK
ADAMS TAKES FREE KICK
ADAMS SENDS A LONG BALL LOW
UPFIELD...TOWARDS LINEKER
LINEKER SENDS A LONG BALL LOW
UPFIELD...TOWARDS WEBB
WEBB MAKES LONG 1ST TIME PASS HIGH
ACROSS FIELD...TOWARDS STEVENS
TIME
01:00
```

• More information than graphics, alas

ANDES ATTACK

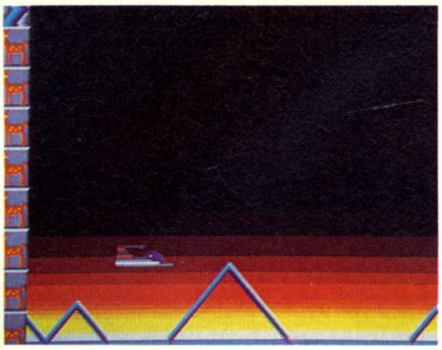
LLAMASOFT

ST • £9.95dk
Also on VIC-20 (expanded to 8K or more)

***Andes Attack* should ring a bell with anybody who owned a Commodore VIC-20 (you remember the VIC – it's the Commodore micro that was released after the PET, and before the C64), because it's one of a batch of games which not only put the VIC on the map, but also introduced an oddball programmer called Jeff Minter, who had a strange fixation for Llamas, Sheep and Yaks...**

● GAMEPLAY

Nothing too complicated here, *Andes Attack* is just a clone of the classic Williams coin-op – *Defender* – the first horizontally-scrolling shoot-em-up, with a near perfect blend of blasting, strategy and good old fashioned fun.



• Looking for llamas, in all the wrong places

Play consists of controlling a spacecraft travelling horizontally over a vector representation of a mountainscape, protecting the inhabitants from a varied selection of alien invaders.

Unfortunately, *Andes Attack* has replaced the excellent features of the coin-op *Defender* with a tiresome control method, redesigned (inferior) graphics and sound, and the final insult – replacing the inhabitants with Llamas.

STORMTROOPER

CREATION

ST • £19.99dk
Currently under development on Amiga

Stormtrooper is another in the long-line of scrolling-platform type games from a new company called Creation. For those of you with long memories you may remember *Stormtrooper* being previewed in the April '88 issue of *ACE*, so has it been worth the wait?

● GAMEPLAY

After being dropped from your futuristic air-transport into the landing zone, you then proceed with extreme caution through a war-torn complex, in a search for the warped physicist Brayniger.

Hampering the progress of your mission are a myriad of mercenaries, security devices and hazardous traps and obstacles. To combat these interferences, you'll need the extra weaponry encountered which you'll be able to add to your arsenal and use to blast (almost) everything in sight.

● GRAPHICS AND SOUND

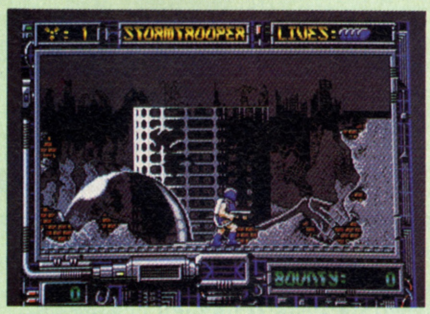
Stormtrooper's presentation throughout is of a high standard, which helps elevate the otherwise average gameplay into an more absorbing experience. Visuals comprise of atmospheric and superbly designed backdrops which parallax-scroll along at a smooth pace. Sprites are also well defined and attractively animated.

Audio is practical, with a normal set of sound spot-effects for explosions, shooting, etc – and a stirring but ultimately stale soundtrack which can thankfully be turned off in favour of sound-effect only audio.

GREAT ATMOSPHERE

● OTHER VERSIONS

Stormtrooper is currently under development on the Amiga, with Creation reported to be including enhancements in audio-visuals if the programmers have time.



• Exploring the excellent Terminator-esque landscapes

● EXPRESS VERDICT

Although *Stormtrooper's* gameplay may be unoriginal, the feeling you get from playing the game is that it's been expertly designed in all departments: playability, audio-visuals, concept, in-screens, etc. It's got just the right balance between difficulty and ease of play – and with 16 levels to complete, lasting interest shouldn't be a problem either.

Stormtrooper conjures up a great sci-fi atmosphere – and is a promising debut for Creation, we look forward to playing their next game.

✪ ✪ ✪ ✪

Rik Haynes

● GRAPHICS AND SOUND

Audio-visuals – ranging from mundane sprites to non-sampled pings, pongs and zaps – are amateurish, predictable and do nothing to inspire confidence in the game.

● OTHER VERSIONS

Needless to say, *Andes Attack* looks and plays in a very similar fashion on the other formats. It was a great success on the VIC-20 – back in 1982 – and in all but colour, the VIC version puts up a very good show against the ST!

● EXPRESS VERDICT

Andes Attack was a great game on the VIC-20 – seven years ago – but in 1989's terms of audio-visuals and gameplay, it fails to compete with the high standards set by other ST releases such as *Falcon*, *Starglider II*, *Virus*, etc.

Sure it's only £10, and there are not many *Defender*-type games available on the ST. However, these are hardly sufficient reasons for purchasing a boring, out-of-date game which looks like it's been in a time-suspended dimension for the past seven years.

Yak? More like YUK! Simply avoid *Andes Attack* at all costs.

✪

Rik Haynes

I LUDICRUS

CRL

ST • £19.95dk
Out soon on Amiga

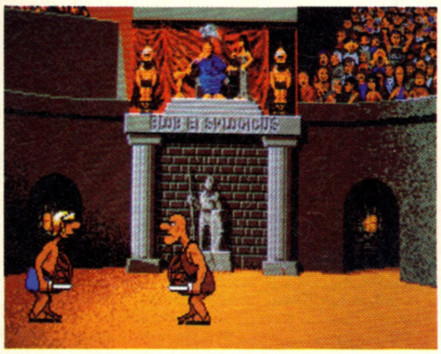
The release of *I Ludicrus* coincides with CRL's recent announcement that it is to launch a series of interactive cartoon games under the name Hypermedia. With its *Asterix*-style graphics does it represent a taste of things to come or is it all just more hype?

● GAMEPLAY

I Ludicrus is a chop-em-up along the lines of *Barbarian*, where you control a rather pathetic gladiator in a bid to defeat three opponents – Herr Lis, Bon D'Age and Bud Vyzer. Yes there's a certain humour at work here but it's a pity it extends into unintended areas. Beginning with Herr Lis, you simply have to use a variety of moves to kill him with a sword. If you're unlucky you get to meet a lion which you must defeat before moving back to take on Herr Lis again. If you're successful you take on Bon D'Age. Etc. For a gameplay that relies solely on joystick response it's a pity that control seems pretty arbitrary. The range of moves aren't particularly exciting and your ability to deliver the coup de grace pretty hit and miss.

● GRAPHICS AND SOUND

The background arena is colourful and scrolls smoothly enough when the combatants move to the edge of screen, but features no animation. The foreground figures are large sprites animated quite well and are strongly reminiscent of French comic books. Sound comprises short digitised laughs, groans and roars.



• I Ludicrus: Heading for a thumbs-down

● OTHER VERSIONS

The Amiga version will be out shortly, though we haven't seen it yet.

● EXPRESS VERDICT

I Ludicrus would be worth buying if there were a) more backgrounds b) more opponents c) more moves d) more control e) more fun. As it is, you're left with a game that seems pretty thin in all departments and not worth your hard-earned money. One day it'll be a budget release worth paying a couple of quid for.

✪

Andy Storer

DYNAMIC DUO

FIREBIRD

Spectrum • £7.99dk
Also on C64, CPC

Not, as you might expect, another game about Batman and his hapless sidekick, chum and all-round plonker Robin, *Dynamic Duo* concerns itself with the exploits of a dwarf and his pet duck exploring the mysterious rooms and corridors of the evil Grim Reaper.

● GAMEPLAY

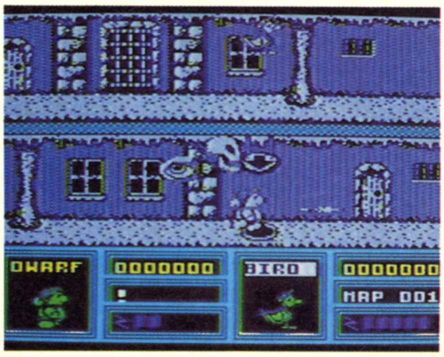
Dynamic Duo is a simultaneous one or two-player arcade adventure which follows the standard route of the genre with you undergoing a quest for not only a "Calculations Room" but also the key to open it. Unfortunately, to complicate matters further, the key has been split up into ten separate fragments which will have to be found and put together.

Hampering your progress through the myriad of rooms and corridors is Grim's minions, ranging from spinning skulls to floating eyes. Luckily, these creatures of the night can be destroyed with a quick press of your fire button. Though hesitation will spell your demise – or depletion of your energy level at the very least.

● GRAPHICS AND SOUND

The monochrome visuals comprise reasonable backdrops which scroll along at a satisfactory pace (although the play area is rather small, making the task that much easier) marred by depressingly mediocre sprite definitions and animations.

Audio is made up of the usual selection of unexciting and run-of-the-mill sound spot-effects.



• Keep running, that skull only has eyes (well, eye) for you

● OTHER VERSIONS

CPC *Dynamic Duo* contains superior visuals in terms of a colourful display, but the gameplay is just as insipid. No details on the C64 version of *Dynamic Duo* are currently available.

● EXPRESS VERDICT

Dynamic Duo is a below average game, which would sit more comfortably as a budget release. Go for Firebird's *Black Lamp* for a far better example of an arcade adventure, because the only thing dynamic about *Dynamic Duo* is the force at which you throw the game into the rubbish bin after playing it.

✪

Rik Haynes

THE RELEASE SCHEDULE

NEW COMPUTER EXPRESS
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AMIGA

Alien Legion	24.99	Imminent	Gainstar
Baal	19.95	Imminent	Psygnosis/Psyclapse
Barbarian II	19.99	March/April	Palace
Batman - The Caped Crusader	24.95	Imminent	Ocean
Billiards	19.95	Out Now	Ere/Infogrames
Cosmic Pirate	19.99	February	Outlaw
Crazy Cars II	24.99	End Feb	Titus
Custodian	19.99	Mid Feb	Hewson
Dark Fusion	19.99	February 22	Gremlin
Dragon Ninja	24.95	Mid Feb	Imagine
Dreamland	T.B.A.	Late Feb	Gainstar
Earl Weaver Commissioner's Disk.	9.99	April	Electronic Arts
Galdregon's Domain	19.99	Imminent	Pandora
Gary Lineker's Hotshots	19.99	February	Gremlin
Incredible Shrinking Sphere	24.99	Mid Feb	Electric Dreams
Kennedy Approach	24.95	Early March	Microprose
Neuromancer	24.95	2nd Quarter	Interplay/EA
Ringside	24.99	Mid Feb	E.A.S.
Robocop	24.95	Easter	Ocean
Shoot-Em-Up Construction Kit	24.99	End Feb	Outlaw
Skateball	19.99	2nd Quarter	Ubi Soft
Tech	19.99	Late Feb	Gainstar
Teenage Queen	19.95	Out Now	Infogrames
Tiger Road	24.99	End Feb	Capcom/U.S.Gold
TV Sports Football	29.99	Out Now	Cinemaware
Virus Infection Protection	29.99	Out Now	Discovery
War in Middle Earth	24.99	Mid Feb	Melbourne House
Wec Le Mans	24.95	March	Imagine
Zany Golf	24.95	Late Feb	Electronic Arts

AMSTRAD CPC

Airborne Ranger	D19.95	Out Now	Microprose
Airborne Ranger	T14.95	Out Now	Microprose
Barbarian II	D14.99	End Feb	Palace
Barbarian II	T 9.99	End Feb	Palace
Chuck Yeager's Adv Flight Trainer	D14.95	Late Feb	Electronic Arts
Chuck Yeager's Adv Flight Trainer	T 8.95	Late Feb	Electronic Arts
Crazy Cars II	D14.99	Mid Feb	Titus
Crazy Cars II	T 9.99	Mid Feb	Titus
Dark Fusion	D14.99	February 22	Gremlin
Dark Fusion	T 9.99	February 22	Gremlin
Dragon Ninja	D14.95	Imminent	Imagine
Dragon Ninja	T 9.95	Imminent	Imagine
Gary Lineker's Hotshots	D14.99	February 27	Gremlin
Gary Lineker's Hotshots	T 9.99	February 27	Gremlin
Graham Gooch	T 1.99	Imminent	Alternative
Incredible Shrinking Sphere	D14.99	Mid Feb	Electric Dreams
Incredible Shrinking Sphere	T 9.99	Mid Feb	Electric Dreams
Street Gang	T 1.99	Out Now	Pandora
Super Snake Simulator	T 1.99	Imminent	Alternative
War in Middle Earth	T 9.99	February	Melbourne House
Wec Le Mans	D14.95	Imminent	Imagine
Wec Le Mans	T 9.95	Imminent	Imagine

SPECTRUM

Captain Blood	T	9.95	Imminent	Exxos
Dark Fusion	T	7.99	February 22	Gremlin
Dragon Ninja	T	8.95	Imminent	Imagine
Emlyn Hughes International Soccer	T	9.95	Out Now	Audiogenic
Gary Lineker's Hotshots	T	7.99	February 27	Gremlin
Incredible Shrinking Sphere	T	9.99	Mid Feb	Electric Dreams
Puffy's Saga	T	8.99	2nd Quarter	Ubi Soft
Skate or Die	T	8.95	Early March	Electronic Arts
Street Gang	T	1.99	Out Now	Players
Super Snake Simulator	T	1.99	Imminent	Alternative
War in Middle Earth	T	9.99	February	Melbourne House
Wec Le Mans	T	8.95	Imminent	Imagine

BBC

Citadel	T 2.99	Out Now	CDS
Death Star	T 1.99	Out Now	CDS
Smash & Grab	T 1.99	Out Now	CDS
Stryker's Run	T 2.99	Out Now	CDS
Graham Gooch (Electron only)	T 1.99	Imminent	Alternative

COMMODORE 64/128

Action Service	D14.95	Imminent	Cobra/Infogrames
Action Service	T 9.95	Imminent	Cobra/Infogrames
Barbarian II	D12.99	Out Now	Palace
Dark Fusion	D14.99	February 22	Gremlin
Dark Fusion	T 9.99	February 22	Gremlin
Dragon Ninja	D14.95	Imminent	Imagine
Dragon Ninja	T 9.95	Imminent	Imagine
Final Frontier	D17.99	Imminent	PSS
Final Frontier	T12.99	Imminent	PSS
Firezone	D17.99	End Feb	PSS
Firezone	T12.99	End Feb	PSS
Fish!	D19.99	Out Now	Rainbird
Gary Lineker's Hotshots	D14.99	February 27	Gremlin
Gary Lineker's Hotshots	T 9.99	February 27	Gremlin
Grand Prix Circuit	D14.95	Imminent	Accolade/EA
Grand Prix Circuit	T 9.95	Out Now	Accolade/EA
Hostages	D14.95	February	Infogrames
Hostages	T 9.95	February	Infogrames
Incredible Shrinking Sphere	D14.99	Mid Feb	Electric Dreams
Incredible Shrinking Sphere	T 9.99	Mid Feb	Electric Dreams
Iron Lord	D19.99	2nd Quarter	Ubi Soft
Iron Lord	T12.99	2nd Quarter	Ubi Soft
Modem Wars	D14.95	April	Electronic Arts
Olympic Ski	T 1.99	Imminent	Alternative
Project Firestart	D14.95	Late Feb	Electronic Arts
Rik the Roadie	T 1.99	Imminent	Alternative
Rocket Ranger	D14.99	Mid Feb	Cinemaware
Skateball	D14.99	2nd Quarter	Ubi Soft
Skateball	T 9.99	2nd Quarter	Ubi Soft
Street Gang	T 1.99	Out Now	Players
Super Snake Simulator	T 1.99	Imminent	Alternative
T.K.O.	T 9.95	Out Now	Accolade/EA
Tomcat	T 1.99	Out Now	Players
War in Middle Earth	D19.99	Mid Feb	Melbourne House
War in Middle Earth	T 9.99	Mid Feb	Melbourne House
Warlock's Quest	D14.95	Imminent	Ere/Infogrames
Warlock's Quest	T 9.95	Imminent	Ere/Infogrames
Wec Le Mans	D14.95	Imminent	Imagine
Wec Le Mans	T 9.95	Imminent	Imagine

ATARI ST

Alien Legion	24.99	Imminent	Gainstar
Andes Attack	9.95	Out Now	Llamasoft
B.A.T.	24.99	2nd Quarter	Ubi Soft
Barbarian II	19.99	February 20	Palace
Billiards	19.95	Out Now	Ere/Infogrames
Bismarck	24.99	Out Now	PSS
Chaos Strikes Back	14.99	February 23	Mirrorsoft/FTL
Cosmic Pirate	19.99	February	Outlaw
Custodian	19.99	Mid Feb	Hewson
Dark Fusion	19.99	February 22	Gremlin
Dragon Ninja	19.95	Mid Feb	Imagine
Dragonscape	19.95	February 16	Software Horizons
F-16 Combat Pilot	24.95	Out Now	Digital Integration
Federation Of Free Traders	29.99	Imminent	Gremlin
Final Command	24.99	2nd Quarter	Ubi Soft
Fusion	24.95	Late Feb	Electronic Arts
Galdregon's Domain	19.99	Imminent	Pandora
Gary Lineker's Hotshots	19.99	February 27	Gremlin
Gridrunner	9.95	Early March	Llamasoft
Incredible Shrinking Sphere	19.99	Mid Feb	Electric Dreams
Iron Lord	24.99	2nd Quarter	Ubi Soft
Orbiter	24.99	Imminent	Mirrorsoft
Ringside	24.99	Mid Feb	E.A.S.
Robocop	19.95	Easter	Ocean
Skateball	19.99	2nd Quarter	Ubi Soft
Skyfox II	24.95	Late Feb	Electronic Arts
Teenage Queen	19.95	Out Now	Infogrames
Tiger Road	19.99	End Feb	Capcom/U.S.Gold
War in Middle Earth	24.99	Mid Feb	Melbourne House
Wec Le Mans	19.95	March	Imagine
Zany Golf	24.95	Out Now	Electronic Arts

SPECTRUM +3

Barbarian II	D14.99	February 14	Palace
Captain Blood	D14.95	Out Now	Exxos
Dark Fusion	D12.99	February 22	Gremlin
Dragon Ninja	D14.95	Imminent	Imagine
Emlyn Hughes International Soccer	D14.95	Out Now	Audiogenic
Fish!	D15.99	Out Now	Rainbird
Gary Lineker's Hotshots	D12.99	February 27	Gremlin
Mini-Putt	D14.95	2nd Quarter	Accolade/EA
Puffy's Saga	D14.99	2nd Quarter	Ubi Soft
Skate or Die	D14.95	Early March	Electronic Arts
Spitting Image	D14.95	Out Now	Domark
Trivial Pursuit	D19.95	Out Now	Domark
Wec Le Mans	D14.95	Imminent	Imagine

AMSTRAD PCW

Fish!	24.99	Out Now	Rainbird

ARCHIMEDES

Fish!	24.99	Out Now	Rainbird

ELECTRON

Graham Gooch	T 1.99	Imminent	Alternative

MACINTOSH

Fish!	34.99	February	Rainbird

MSX

Who Dares Wins II	T 1.99	Imminent	Alternative

IBM & COMPATIBLES

Abrams Battle Tank	3.5+5.25	24.99	March	Electronic Arts
Batman – The Caped Crusader	5.25	19.95	March	Ocean
Billiards	5.25	19.95	February	Ere/Infogrames
Crazy Cars II	5.25	24.99	End Feb	Titus
Dragon Ninja	5.25	19.95	March	Imagine
F-16 Combat Pilot	5.25	24.95	End Feb	Digital Integration
Fast Break	5.25	24.95	Out Now	Accolade/EA
Final Frontier	3.5+5.25	24.99	Imminent	PSS
Firezone	5.25	24.99	End Feb	PSS
Modem Wars	3.5+5.25	24.95	April	Electronic Arts
Puffy's Saga	3.5	19.99	2nd Quarter	Ubi Soft
Puffy's Saga	5.25	19.99	2nd Quarter	Ubi Soft
Robocop	5.25	19.95	Easter	Ocean
Skateball	3.5	19.99	2nd Quarter	Ubi Soft
Skateball	5.25	19.99	2nd Quarter	Ubi Soft
Speedball	3.5+5.25	24.99	Out Now	Image Works
T.K.O.	5.25	24.95	Late Feb	Accolade/EA
Times of Lore	5.25	24.95	Mid Feb	Microprose
War in Middle Earth	5.25	24.99	Mid Feb	Melbourne House
Wasteland	3.5+5.25	24.95	Out Now	Electronic Arts
Wec Le Mans	5.25	19.95	March	Imagine

Out Now = Released within the last month
Imminent = Expected at time of publication

The Release Schedule is a reference guide to new and forthcoming products. Dates given are expected release dates and will be adjusted weekly. Please allow for slippage. Compiled by Software Information Services, a department of Inter-Mediates Ltd.

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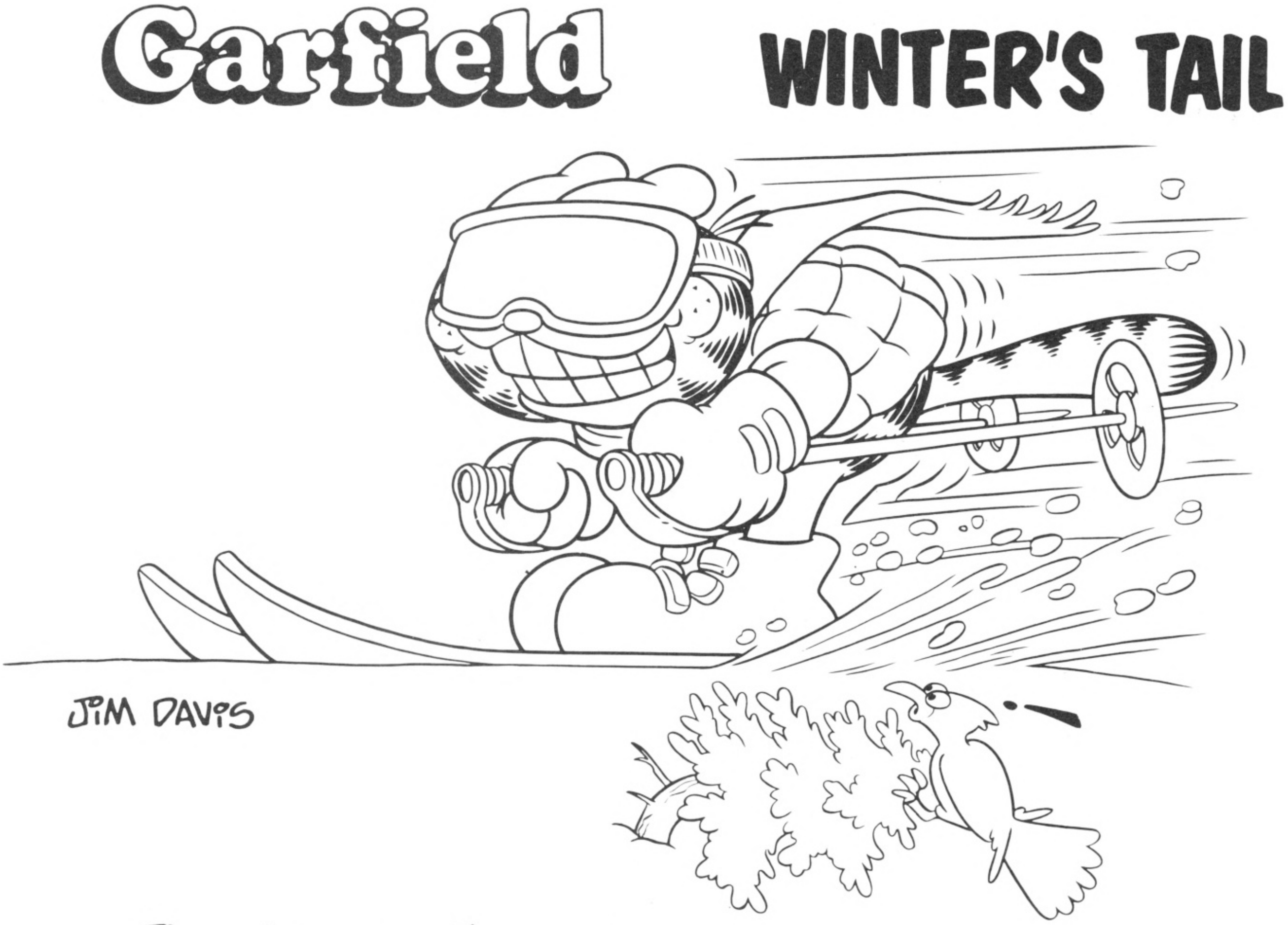

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The Openings of Gates

The boy wonder and Harvard dropout who developed MS-DOS for IBM is possibly the single most influential man in the micro industry. Mike Scialom looks at the rise and rise of Bill Gates...

Today Bill Gates is still only 32, the world's youngest dollar billionaire and, as the Financial Times said of him, "the single most influential person in the micro industry". Six years ago, when he introduced MS-DOS through his company, Microsoft, Gates predicted that "over the next five years we will have changed the way people work". Since then 20 million IBM PCs and clones have been sold all over the world and we know that to be true.

Now, with the launch of IBM's new Microsoft-written operating system, OS/2, Gates predicts that computer technology is gradually replacing printed matter such as newspapers and will overtake paper usage in the next "two to three years". This he expects to be achieved through the CD-ROM storage, the development of OS/2 as the industry standard, and faster access speeds of the huge quantities of data held on a compact disk through further developments in chip technology.

The chips are down

All these things are realistic. But things were not always so. In the early 70's the idea of using software across a variety of computers was unheard of. Writing software was tied in to a mainframe which may only sell to a dozen or so multi-nationals. But when Intel brought out its microprocessor chips Gates started writing for the chips rather than the hardware they ended up in. He developed the first version of Basic while still at Harvard, but in 1975 he dropped out to start Microsoft with colleague Paul Allen.

The Sound of Gates

(or) This Man Has An Ego the Size of a Small Planet

'In 1982 '(In five years time) we will have changed the way people work.'

'Today we have over 300 companies who have licensed our system software... there's actually 20 million machines running the MS-DOS operating system.'

'Ask IBM who its most important partner is. Ask Apple; ask A T & T.'

'Paul Allen and I wrote to Intel to tell them what an unbelievable device they had created. That was in 1974. Steve Jobs had nothing to do with the creation of the personal computer industry.'

'Everybody should have a friend who really likes personal computers.'

'Things have developed the way we expected them to – that is because we have been involved in every aspect of the business.'

In 1980 came the chance of a lifetime when IBM went hunting for an operating system for its fledgling micro.

The story goes that IBM usually took four years on product development – four years from the initial idea to a saleable product. Recognising that a spec launched four years later would be way out of date in the micro business, it went asking others to do some of the development work. Microsoft, a tiny company then, was asked to bring in a low-cost operating system. Gates went out and bought a program called *QDOS* (*Quick and Dirty Operating System*) from another Seattle software publisher, tidied it up and gave IBM MS-DOS.

Window clean-up

The rest is history, as the IBM PC went on to dominate the business market – as it still does today – all the while establishing MS-DOS as the industry standard system it now is. Version 4.0 has seen further enhancements.

But Microsoft is no longer a one-product company. With Windows it intends to establish the leading person-computer interface for many years to come, and OS/2 is already in use with several publishers developing software for use with PS/2s and clones.

In the meanwhile, Gates remains something of an enigma. How does he manage to convince some of the biggest rival companies in the world – IBM, A T & T, Apple and Compaq amongst others – that he is their closest friend and ally?

Certainly he is charming, discreet and passionately keen for his vision to prevail – all set off with a monster ego. His trick is to spot trends and develop them for everyone whilst convincing each company that he is their mastermind. With his ability to get the chip designs he wants and then simultaneously develop software for the Japanese, Europeans and Americans, he has certainly taken centre stage in the business computer arena.

The soft touch

Gates developed an early interest in electronics, and by 16 was writing his own computer programs. Now, 16 years later, he is the industry's software guru. The goal, he says, is "softer software" – software which will learn as it is used. This is his goal, and with the resources at his disposal and his innate sense of what chips and software can do, he looks like one of the few people to be able to introduce fifth generation computing.

With OS/2, we can see the start of something new. When Gates introduced MS-DOS, the previous industry standard, Digital Research's CP/M, virtually disappeared. Then industry could afford to scrap its CP/M machines and start over. This time round that is impossible. So OS/2 can be discovered gradually over the next few years.

As Gates says: "The transition from DOS to OS/2 is an evolutionary improvement. We can expect that our customers will be mixing DOS and OS/2 machines for many years to come." It is obvious that he has some sway about the specification a new IBM computer should have. Its emphasis on the graphical interface means that "you have total freedom to put up any display you want".

• Bill Gates: Looking for the next opening

This may sound old hat to Apple Macintosh users, but to the IBM world it is a revolution. And anyone who has seen the VGA version of Melbourne House's *War in Middle Earth* will already be familiar with the graphics potential. Irony of ironies, wouldn't it be delightful to think that with OS/2 and its graphics emphasis – which "is used to increase very dramatically the band width of information that passes from the machine to the user" as boy wonder turned master tactician Gates puts it – IBM may have put together the ultimate games machine? ●

Gates dates

1956 Born Seattle
1970 Writes his first computer program
1974 Writes BASIC for the first generation of microprocessors
1975 Drops out of Harvard University to start Microsoft
1980 Develops MS-DOS for IBM
1986 Microsoft goes public: Gates holds 45 per cent of shares valued at $350 million
1987 IBM's second generation PCs launched with Microsoft's OS/s operating system

Workbench benchtest

Version 1.3 of Amiga Workbench *is here at last, but was it worth the wait? Ben Taylor takes a look at what's new*

All Amigas ● £14.99 ● Optional Kickstart ROM for A500/A200 TBA

After all the delays, it's finally here. It was a close run thing between the Second Coming and AmigaDOS 1.3, but Commodore won in the end.

User Interface

AmigaDOS 1.3 comes on 3 disks, one being a *Kickstart* disk needed for the old A1000 only. The other disks replace your standard *Workbench* and *Extras* disks. The differences in the initial look of the *Workbench* and command line CLI system are minimal, though *Workbench 1.3* takes up 23K more free RAM than *1.2*.

HIGHLIGHTS
- Sensibly priced upgrade
- Good manual (although very techie)
- Command line history and loads of new functions for programmers

DRAWBACKS
- Floppy disk access time still slow
- Kickstart ROM not yet available

Features

Just feast your mince pies on the new features panel piece – a programmer's delight!

To be able to boot from hard disk, A500/A2000 owners need the *Kickstart 1.3* ROM – although this is being shipped already in new Amigas, Commodore inexplicably can't supply it separately yet. Eventually it will cost around £20 extra.

The recoverable RAM disk preserves its contents over a reset, but there are two drawbacks: it's awkward to set up (three CLI commands) and its default size is a fixed 242K, leaving only 36K free on an A500!

Documentation

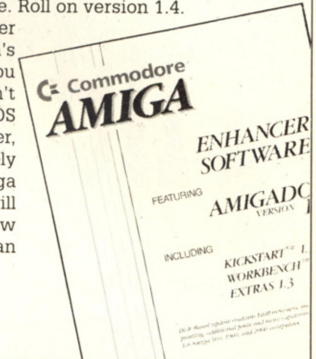
The manual is pleasantly comprehensive, in contrast to the standard Amiga manuals. All new commands are listed with examples. However, it's written with a heavy techie bias, and isn't a CLI tutorial for newcomers.

Verdict

There's still room for improvement in AmigaDOS – until floppy disk drive speed is improved and basic commands like DIR, COPY, TYPE and DELETE are permanently in ROM, the Amiga will remain awkward to use. Roll on version 1.4.

If you never use the Amiga's CLI, you probably won't need AmigaDOS 1.3. However, any remotely serious Amiga owner is will find the new features an absolute boon.

✪✪✪✪



20 things you never knew about AmigaDOS 1.3

(Well, OK, so it's been so widely previewed you knew anyway.)

1 – Command line history for correcting typos
2 – ALIAS allows you to abbreviate regular commands
3 – Faster printer drivers
4 – MORE command for paged text file display
5 – Recoverable RAM disk – contents preserved over a reboot
6 – Commands can be made 'resident' – don't need to have them on disk
7 – ICONX lets you execute CLI scripts from Workbench
8 – EVAL mini-calculator on the CLI
9 – SKIP command can go backwards for loops in script files
10 – SPEAK command to read text files out (!)
11 – 'Pipes' send info from one task to another
12 – Hard disks speeded up almost eight times
13 – On-screen maps of CPU usage and free memory
14 – 'MicroEmacs' text editor bundled
15 – Change the cursor into a digital clock
16 – Redirect serial/parallel output to disk files
17 – 'FastFonts' system speeds up text handling
18 – File protection properly implemented
19 – Standard DTP Helvetica, Courier and Times fonts provided
20 – 'Environment variables' let you save global pathnames etc.

AMIGA	CAPTAIN BLOOD		DEFENDER OF THE CROWN		THREE STOOGES		XENON	
	RRP	SRP	RRP	SRP	RRP	SRP	RRP	SRP
BAAL	44.90	20.96	49.90	20.92	49.94	21.96	39.94	20.96
BATMAN	49.90	23.46	54.90	23.42	54.94	24.46	44.94	23.46
BATTLECHESS	49.90	24.96	54.90	24.92	54.94	25.96	44.94	24.96
CRAZY CARS 2	49.94	22.48	54.94	22.44	54.98	23.48	44.98	22.48
DRAGON'S LAIR (1 MEG)	69.90	34.96	74.90	34.92	74.94	35.96	64.94	34.96
DUNGEON MASTER (1 MEG)	49.94	23.48	54.94	23.44	54.98	24.48	44.98	23.48
ELITE	49.90	22.46	54.90	22.42	54.94	23.46	44.94	22.46
F16 FALCON	54.94	24.98	59.94	24.94	59.98	25.98	49.98	24.98
FED OF FREE TRADERS	54.90	27.98	59.90	27.94	59.94	28.98	49.94	27.98
FISH!	49.90	22.46	54.90	22.42	54.94	23.46	44.94	22.46
FOOTBALL MANAGER 2	44.90	19.96	49.90	19.92	49.94	20.96	39.94	19.96
GALDREGON'S DOMAIN	44.90	19.96	49.90	19.92	49.94	20.96	39.94	19.96
HEROES OF THE LANCE	49.94	24.98	54.94	24.94	54.98	25.98	44.98	24.98
HOSTAGES	49.90	22.46	54.90	22.42	54.94	23.46	44.94	22.46
HYBRIS	51.90	24.96	56.90	24.92	56.94	25.96	46.94	24.96
JOAN OF ARC	49.94	24.98	54.94	24.94	54.98	25.98	44.98	24.98
KRYSTAL	54.94	24.98	59.94	24.94	59.98	25.98	49.98	24.98
LOMBARD RAC RALLY	49.90	22.46	54.90	22.42	54.94	23.46	44.94	22.46
MENACE	44.90	20.96	49.90	20.92	49.94	21.96	39.94	20.96
PACMANIA	44.90	19.96	49.90	19.92	49.94	20.96	**39.94**	**19.96**
PHOTON PAINT	94.94	46.98	99.94	46.94	99.98	47.98	89.98	46.98
POWERDROME	49.90	24.96	54.90	24.92	54.94	25.96	44.94	24.96
PURPLE SATURN DAY	49.90	22.46	54.90	22.42	54.94	23.46	44.94	22.46
ROBOCOP	49.90	23.46	54.90	23.42	54.94	24.46	44.94	23.46
ROCKET RANGER	54.94	25.98	59.94	25.94	59.98	26.98	49.98	25.98
SARGON 3 CHESS	49.90	22.46	54.90	22.42	54.94	23.46	44.94	22.46
SPEEDBALL	49.94	23.48	54.94	23.44	54.98	24.48	44.98	23.48
STARGLIDER 2	49.90	22.46	54.90	22.42	54.94	23.46	44.94	22.46
SWORD OF SODAN	51.90	24.46	56.90	24.42	56.94	25.46	46.94	24.46
TEENAGE QUEEN	44.90	16.98	49.90	16.94	49.94	17.98	39.94	16.98
THUNDER BLADE	49.94	24.98	54.94	24.94	54.98	25.98	44.98	24.98
TV SPORTS FOOTBALL	54.94	24.98	59.94	24.94	59.98	25.98	49.98	24.98
UNIVERSAL MIL SIMULATOR	49.90	22.46	54.90	22.42	54.94	23.46	44.94	22.46
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	RRP	SRP	RRP	SRP	RRP	SRP	RRP	SRP
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BATMAN	44.90	20.96	44.94	18.96	39.94	19.96	39.94	20.96
COLLOSUS CHESS X	49.94	23.98	49.98	21.98	44.98	22.98	44.98	23.98
CRAZY CARS 2	44.94	19.98	44.98	17.98	39.98	18.98	39.98	19.98
DUNGEON MASTER	49.94	22.48	49.98	20.48	44.98	21.48	44.98	22.48
ELITE	49.90	22.46	49.94	20.46	44.94	21.46	44.94	22.46
F-16 COMBAT PILOT	49.90	23.96	49.94	21.96	44.94	22.96	44.94	23.96
F16 FALCON	49.94	22.48	49.98	20.48	44.98	21.48	44.98	22.48
FED OF FREE TRADERS	54.90	27.98	54.94	25.98	49.94	26.98	49.94	27.98
FISH!	49.90	22.46	49.94	20.46	44.94	21.46	44.94	22.46
FLIGHT SIMULATOR 2	64.94	33.98	64.98	31.98	59.98	32.98	59.98	33.98
FOOTBALL MANAGER 2	44.90	19.96	44.94	17.96	39.94	18.96	39.94	19.96
GALDREGON'S DOMAIN	44.90	19.96	44.94	17.96	39.94	18.96	39.94	19.96
HEROES OF THE LANCE	49.94	24.98	49.98	22.98	44.98	23.98	44.98	24.98
HOSTAGES	49.90	22.46	49.94	20.46	44.94	21.46	44.94	22.46
JOAN OF ARC	44.94	21.98	44.98	19.98	39.98	20.98	39.98	21.98
KRYSTAL	54.94	24.98	54.98	22.98	49.98	23.98	49.98	24.98
LANCELOT	44.90	19.96	44.94	17.96	39.94	18.96	39.94	19.96
LOMBARD RAC RALLY	49.90	22.46	49.94	20.46	44.94	21.46	44.94	22.46
OPERATION WOLF	44.90	20.96	44.94	18.96	39.94	19.96	39.94	20.96
PACMANIA	44.90	19.96	44.94	17.96	39.94	18.96	39.94	19.96
POWERDROME	49.90	24.96	49.94	22.96	44.94	23.96	44.94	24.96
PURPLE SATURN DAY	49.90	22.46	49.94	20.46	44.94	21.46	44.94	22.46
QUANTUM PAINTBOX	49.90	24.94	49.94	22.94	44.94	23.94	44.94	24.94
ROBOCOP	44.90	20.96	44.94	18.96	39.94	19.96	39.94	20.96
SARGON 3 CHESS	49.90	22.46	49.94	20.46	44.94	21.46	44.94	22.46
SPEEDBALL	49.94	23.48	49.98	21.48	44.98	22.48	44.98	23.48
STARGLIDER 2	49.90	22.46	49.94	20.46	44.94	21.46	44.94	22.46
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THUNDER BLADE	44.94	21.98	44.98	19.98	39.98	20.98	39.98	21.98
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NOW WITH TV MODULATOR

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The MEGA ST computers are styled as as lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200) both Free Of Charge. Return the coupon for further details.

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+colour monitor=£1198

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Desktop Publishing (DTP) is one of the fastest growing applications for personal computers. We are pleased to announce a powerful low cost package for the Atari ST called PageStream. PageStream costs only £149 (+VAT=£171.35) and, because it works with an Atari 1040ST and a Seikosha SP-180AI printer, you can be up and running with a complete system for less than £1000. Some of the features of PageStream are listed to the right. If you would like further information on this program, complete and return the coupon below, ticking the 'DTP' box in the corner.

- * TEXT-FLOW AROUND GRAPHICS
- * ROTATION OF TEXT & GRAPHICS
- * SLANT OR TWIST ANY OBJECT
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- * AUTO/MANUAL KERNING & HYPHENATION
- * GROUPING OF OBJECTS

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52 Tottenham Court Road, London, W1P OBA
OPEN: MON-SAT 9.30am - 6.00pm LATE NIGHT: NONE

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ATARI ST

ST COMPUTERS

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All prices correct at the time of going to press. E&OE.

520ST-FM EXPLORER PACK

WITH BUILT-IN 1Mb DISK DRIVE

The value for money offered by the Atari ST range is reflected in the Explorer Pack featuring the 520ST-FM computer with 512K RAM. The 520ST-FM computer now comes with a built-in 1 Mb double sided disk drive as well as a free mouse controller and a built-in TV modulator. The new 520ST-FM Explorer Pack includes the 520ST-FM computer, the arcade game Ranarama, a tutorial program and some useful desktop accessories. In addition, if you buy the Explorer Pack from Silica, we will give you the Silica ST Starter Kit worth over £200, FREE OF CHARGE. Return the coupon for details of our Starter Kit and of the full ST range.

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+VAT= £299

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+ SC1224 colour monitor: £598 INC VAT

WHY SILICA SHOP?

Before you decide when to buy your new Atari ST computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer and expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Atari ST related products in the UK, a full time Atari ST specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years with an annual turnover in excess of £8 million and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. But don't just take our word for it. Complete and return the coupon below for our latest literature and begin to experience the Silica Shop specialist Atari service.

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Portex runs on all IBM PCs and compatibles and supports all popular printers from dot matrix to laser jet.

TECH TIPS

HELP!

WYSIWYG PC?

I am a first-time owner and I find your magazine most helpful, but I really could do with some advice if you would be kind enough to give it.

My main interest is in word processing and I have recently invested in an Amstrad PC1640 with 20Mb hard disk and Juki 6100 printer. I use *WordStar 1512* word processor disks which came with the machine. Unfortunately, I am not happy with the word processing.

My chief worry is that with my new machine there is sometimes a big space between the words. I also feel that I would like a more sophisticated word processor. Besides cut & paste, search & replace, and spell checker – which I now have – I would like an in-built thesaurus and, if possible, something to check style.

I have not got a colour screen, but I would like to actually see not only boldface and underline but also italics on screen.

Derrick A. Pike, Glastonbury, Somerset

• On the Apple Macintosh I could recommend three or four packages that would meet your requirements. On the PC, however, it's a struggle to find one.

The problem with spacing is due to a combination of factors. First, it only arises when you use justified setting (where every line of type lines up on the right and left margins). Second, the PC and most printers use what are called mono-spaced characters, which means that every character occupies the same amount of space even though they shouldn't (like "i" and "w"). But this means that the only way to pad out a line to get justification is to insert space characters which, of course, occupy a fixed width.

Obviously, if the line falls, say, ten spaces short and has eleven words, the program can insert one extra space between each word and the line is justified and the spacing between words is even. But if there were only eight or nine words in the line some inter-word spaces would have to be twice as large.

The correct way to handle this problem, and the solution used by the Macintosh and other graphics-based systems, is to use micro-spaced characters. So the smallest unit of padding space is one pixel on screen, and one dot on the printer. This gives the word processing software a much greater range of options when it comes to padding out a line with the result that inter-word spacing looks much more even.

On the PC you'd need to go to graphics-based software like *1st Word Plus* running under GEM, or a more sophisticated package like *WordStar Professional, Microsoft Word, Borland Sprint*, or *Word Perfect*. But you'll also need to buy a dot-matrix printer.

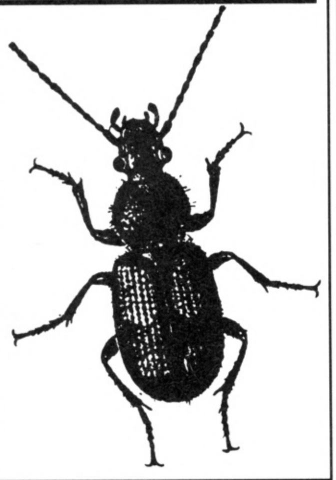
If the spacing problem bothers you that much simply stop using justified setting.

All of the above-named programs (except *1st Word Plus*) have a built-in thesaurus, but none has a style-checker. In fact, I can't think of a word processing package that does. However, you can buy an add-on program, the best-known being *Readability* from Scandinavian PC Systems, PO Box 215, Uxbridge UB10 8TG, price £56.80.

BUG OF THE WEEK

Elite players who own Amiga 1000s and 2000s will find the screen goes black after 5-10 minutes, making the game totally unplayable. This is due to a change in the chip set on these models and Telecomsoft is apparently aware of the problem.

We're dying to give away a thirteen week subscription for this one, so will whoever phoned this tip in please give us a call...



Panagaeus crux-major • Distinguishable from near-relations through (a) its size, and (b) the fact that its posterior red spots usually stretch to the outer margin of its elytra. Found usually beside water, in damp meadows and intergalactic space trading games. Not generally common in this country.

TIP

PC power-off

I have been plagued by a problem for many months now; for hours on end my Amstrad PC1512 would work perfectly, then Zap! – it would suddenly switch itself off. At first I thought it was a problem with my hardware, but being an old, second-hand machine it was no longer under warranty, so I left it for a while. After a few weeks I became used to the problem, until it crashed out whilst I was in the middle of a lengthy school project – so I put a message on a local BBS.

After a few days, some nice person left me a message referring me to a "Technical Bulletin 12" issued by Amstrad. This is concerned with pre-November 1986 models. The fault is due to noise from one power supply cutting a protector circuit on another. It's really quite simple to cure.

(i) With a colour monitor you need to solder a 0.1 microfarad capacitor (ceramic disc, 16V minimum working voltage) between pins 13 and 14 of the IC603, found on the circuit board inside the monitor.

(ii) With a monochrome monitor you need to solder the capacitor between pins 8 and 9 of the IC503.

You should only tackle this if you know what you're doing. Failing that, take your monitor into a local computer or electronics shop. They will almost certainly be able to help you.

Iain Arnell

HELP!

Handy Tandy?

Could you please advise me if any of the components of my Tandy TRS80 II system, including mono monitor and twin 5.25" disk drives are compatible with either the Amiga 500 or the Atari ST.

If not, could you suggest a possible use for the monitor or disk drives and 40-odd disks as I should like to recoup some of the cash spent on them. Could you also advise me of a suitable printer driver for connection of my Citizen 120D to an Atari ST.

GH Harbour, Bournemouth, Dorset

• First, the good news: you don't need a printer driver for your Citizen 120D – it will work perfectly well with all ST software.

Second, the not so good news. You could use your mono monitor with either the ST or Amiga. All you need is a composite video lead, available from any dealer worth the name. However, whether you'd want the awesome graphics of the ST or Amiga displayed in nauseous shades of green is for you to decide (few mono monitors have built in speakers either, so you wouldn't get any sound).

Finally, the (probably) bad news. It's just about possible that you might get your disk drives to work with either the ST or Amiga but at the very least this will be difficult, and at worst it will border on the impossible. You'd need to discover the pin-outs on the connector at the disk drive end, make up a suitable cable, and – possibly – write special software to control the drives.

My advice would be not to bother.

Overall, you have several possibilities:

a) Put your TRS80 in a safe place and wait for a market in antique computers to develop.

b) Give it to a local youth club or other charitable operation and bask in the warm glow of self-satisfaction knowing that you are helping others less fortunate to experience the joys of computing.

c) Carry on using it alongside your new system. Be a two-computer family and win the envy of your friends. Use it as a dedicated real-time control system for model railways/the central heating/a household robot. Build your own network so your old and new systems can talk to each other while you're at work.

HELP!

Amiga/PC

I am considering an upgrade from my CPC6128 to an Amiga. Can you tell me anything about PC emulation on the Amiga – I've heard that it is very limited and that it can only run specially-written software, which seems a bit pointless.

I would like to use the Amiga at home and run material at work on an IBM OS/2.

J P Banner, Rotherham, S Yorks

• PC emulation on the A500 is pretty much a lost cause, although the A2000 does a reasonable job. Unfortunately, the reason the A2000 does so well is that you've effectively got an entire PC lurking within the Amiga's case – and that's expensive. In fact you could buy an A500 and a PC-compatible for a lot less than an A2000 and PC bridgeboard.

The good news is that PC emulation isn't really necessary provided the software you use at work and home can export data in ASCII format. With a neat utility package called *Dos2Dos* your Amiga can read PC disks. So, for example, you can save a word processing file on your office PC, take the disk home and load the file into your Amiga word processor and carry on working.

Dos2Dos is available for £25 from Brown Wagh Direct on 01 603 3313.

HELP!

Unjustified complaint

I make regular use of the *Stop Press* desktop publishing package on an Amstrad CPC6128 with DMP-2000 printer and find it very effective for producing a wide range of leaflets, newsletters, etc.

However, one irritating problem I have not solved is loading text from word processed files. When "justify format" is selected, lines start correctly (left justified) but break off and, after a gap, continue on the next line (right justified). This happens with both *Tasword* and *Mini Office II*, even when text from the latter is saved as an ASCII file.

I wrote to AMS a month ago but haven't had a reply. Have you any suggestions?

MG Miller, Sheffield

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Bath, Avon BA1 1EJ.

- I can only think of one explanation for this, and it has to do with what consitutes an ASCII file.

Most word processing programs (and a lot of other software) depend on custom codes to control features like screen formatting, file handling, and so on. By definition, an ASCII file should not contain any of these custom codes and should have only those characters defined in the ASCII set.

Which is fine so far as it goes, but the ASCII set itself contains a number of control codes for things like line feed and carriage return. Now in the case of moving text from a word processor to another application what you want is not an ASCII file but a text file – in other words, you want only the words, punctuation marks, numbers and spaces that you have typed.

I suspect that your ASCII files from *Mini Office* are including some stray carriage returns (which are ASCII char-acters) and these are forcing the line breaks in your formatted text.

The only way around this would be to write a short program (Basic would do, although it will be slow) to go through the ASCII file output of *Mini Office* and strip out anything that isn't an alphanumeric character. This might sound like quite a task but isn't since all the common alphanumeric characters are greater than 32. Just kill any characters with ASCII codes lower than that.

TIP Erroneous error

For several months after I bought my long lusted-after Amiga I was bothered with an irritating problem which may be troubling some of your other readers.

When I booted with a *Workbench* disk, most of the time all would be well. But every now and again a strange 'gremlin' would get to grips with the machine and the dreaded 'REQUESTOR' would appear to tell me that the disk had a Read Write Error!

Sometimes if I switched off the machine and rebooted, even with the same disk, all would be well again, yet at other times it would take several reboots and sometimes another *Workbench* disk altogether (I knew all those backups would be useful!).

Then one day while browsing through some public domain files I came across a little program called STEPRATE which alters the delay times between track reads on the floppy disks. Which means in effect you can speed up or slow down the disk access!

After a little trial and error I found I could induce the READ/WRITE ERROR by using certain parameters with the Steprate command.

So now, by increasing the dealy times slightly at the start of the Startup Sequence and returning them to normal (or even slightly above!) after the 'loadwb', I have had no more problems, and you can increase the speed of your external drive too...

This command seems to be on several PD disks, usually in the C directory, and takes up little memory.

On the subject of rebooting, when your Amiga flashes those colours at you it's telling you how it's feeling:

Dark grey	**hardware is OK**
Light grey	**software is OK**
Red	**ROM Checksum failure**
Green	**Bad ROM**
Blue	**Bad chip RAM**
Yellow	**Exception**

This doesn't mean you should rip the poor old thing open, but it may point at a possible problem if it should expire. Then again, some cretin may have inflicted another virus on us...
Phil White, Walsall

HELP!
Pocket PC

I have recently been looking around for a pocket PC, without much luck. I came across a Casio machine which looked good value at £130 but rather limited in memory.

However, in your Great Leap Forward feature in the Christmas issue, you referred to a pocket PC which Atari is to market. Does this machine run MS-DOS, and is any software available for it?
Steve Rapport, London SW11

- The machine you're referring to is the DIP Pocket PC which is due to be launched at this month's (February) *Which Computer?* Show. The cost of the basic model should be around £200 – but you should count on spending more than that to get a working system.

It doesn't run MS-DOS, but manufacturer DIP claims it will be DOS-compatible but there's a lot of doubt about how useful that will be since the Pocket PC uses an LCD display giving 40 characters in eight lines – and most PC software will be limited or unusable under those circumstances.

The machine will have 128K of RAM as standard, and memory expansion packs are promised, but again there are concerns. Adding packs onto the machine threatens to nullify the "pocket" description.

Built-in software consists of the usual collection of diary, address book and calculator, as well as a text editor which might serve as a rudimentary word processor. The real attraction for number freaks is the promise of a *Lotus 1-2-3*-compatible spreadsheet. How much other software will be available is an open question.

You will be able to connect it to a PC and download data, but then you can do that with most pocket computers like the Psion Organiser or the new Sharp Agenda. You might be advised to wait until the DIP Pocket PC is actually shipping, and the reviews have been published, before committing yourself.

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ST CLUB

Unix in a twist

Full marks to Chris Allen from Felixstowe for information, but lose two brownie points for impatience. he castigates Richard Monteiro (at least I *think* that's what he wanted to do to him) for going on at great length about Unix while being "totally unaware of the fact that a full implementation of Unix already exists for the ST...it will run on an unexpanded 520ST with a single half meg disk drive." Chris is referring to *Minix* which, of course, Richard went on to mention in issue 9 while Chris's letter was lying in a postbox somewhere, steam seeping from under its flaps.

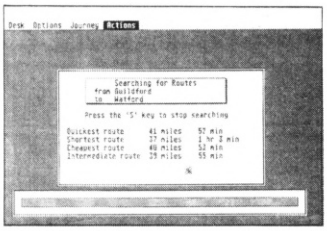
Thanks anyway Chris for trying to keep readers informed. And for the information that you've been using *Minix* for a month with few problems. It seems to run all standard Unix software.

Irrelevant Fact #231

Thanks to Chris also for this. Did you realise that at address FD063D hex on the Mega-ST there is the message "Jim Loves Jeneane" in the ROM? And there is a similar message in the old ROMs at address FCF3C6 hex which says "Dave Staugus loves Bea Hablig". I personally didn't realise that, no. What a pity Chris didn't see fit to include the previous 230 irrelevant facts that he's discovered about the ST.

Route directory

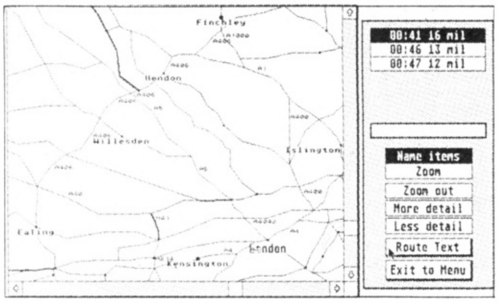
Fancy a £150 program for two quid, John? No, straight up, this is your genuine original, never been near Arthur Daley's lock-up, you have my word as a respected pillock of this community. And with this little beauty the world will truly be your lobster, my son. The roads of Great Britain will lie at your feet.



```
Searching for Routes
from Guildford
to   Watford

Press the 'S' key to stop searching

Quickest route       41 miles    57 min
Shortest route       37 miles    1 hr 3 min
Cheapest route       40 miles    52 min
Intermediate route   39 miles    55 min
```



```
00:41 16 mil
00:46 13 mil
00:47 12 mil
```

Well, part of Great Britain, anyway. Specifically, that bit that lies between Swindon in the north, Bournemouth in the south, Cardiff in the east and Guildford in the west.

If you never journey outside those boundaries, try the PD demo that NextBase has just made of their *Autoroute* program. It works in all respects, but only for this limited map area.

If you don't know what *Autoroute* is, you must have been hiding your head up a chimney for the last month or so, as it's one of the most exciting new programs to appear on the ST. At least it is in my opinion, and that's the one that matters.

It uses the official Ordnance Survey maps of the British Isles to plot your ideal road route for driving between any two towns or cities. It's the kind of program that computers should be being used for, but so seldom are. The kind of program that will appeal as much to non-computer users (if they ever get to hear about it) as enthusiasts such as ourselves.

Autoroute is, for me, a genuinely exciting product that is actually useful and time-saving – as anyone will know who's ever tried to plot a route across several pages of even a good road atlas. Choose the fastest, most economical or the shortest route. Sadly, no "prettiest route" option is included. You could even plot one route and then do another to see how many miles it would add to the journey if you visited Aunt Agatha in Cleethorpes on the way.

This isn't the place for a full software review, but who needs it? You can review the thing yourself for a few quid – and if your regular PD library doesn't have it yet, demand to know the reason why!

Mike Gerrard

When is a copy not a copy?

You get home of an evening and spot the jiffy bag on the kitchen table – yes, that brand new piece of software has just arrived in the post. Whoopee! So what's the first thing you do? Try to back it up, of course. And what happens half the time? You can't. The program's been protected in such a way that you have to use your precious master disk every time.

Even sector-by-sector copiers can fail to deliver the goods. How come? After all, you might reasonably suppose that if you copy a disk in such minute detail you must end up with an exact copy of the original disk – so why won't the *!*#*$!! thing run?

One cause could be the unique numbering system that TOS uses. Each time you format a disk TOS generates a random number between one and a million and slaps it onto the boot sector of the disk. Some commercial programs use this feature and will cast a glance at their disk number before they decide whether to get out of bed or not. If it isn't what it should be, they turn over and go back to sleep.

If you're using a previously formatted disk it will already have its own serial number, and most copying programs won't copy the number from master disk onto the back-up. Some format or re-format the disk as they go, and so also generate a new random number before they start.

There's at least one PD program the does allow you the option of giving your new disk the same serial number as the master disk, and that's FCOPY2. Try backing your disk up in the normal way, and if that doesn't work then try backing it up with the same serial number. It's worth a go, at least.

PC UPDATE

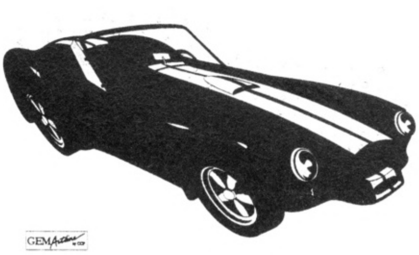
Fonts a million

Still on about GEM this week, but in a more positive vein. One of the nice things about version 3 of GEM is that it comes complete with Bitstream Fontware. This is a system for creating fonts on a number of different types of printer, including 24-pin dot matrix and lasers. I recently set about installing the Bitstream fonts for the Qume Crystal Print II lcd printer I have on review at the moment (an inexpensive machine with an amazingly small footprint). The Crystal Print is an HP Laserjet II compatible printer, for which there is an installation option under GEM. Installing the printer in this way causes GEM to copy across bit-image fonts in a series of sizes which all GEM programs can use.

Reasons for not using a XXXX

I wouldn't buy a Datavue 25 portable (though I did once) as it missed every third or fourth character I typed through the infra red keyboard link. It also needs an arc-light trained on it to read its untwisted lcd screen.

If you have any off-beam reasons for avoiding, or choosing, a particular micro, write to PC Update, New Computer Express, 4 Queen Street, Bath BA1 1EJ



• Once you get GEM properly installed, you can print some pretty amazing graphics like this one, taken from Artline

These fonts will be fine for most applications, and are particularly useful on a laser with a relatively small amount of memory (the Crystal Print comes as standard with only 0.5Mb). This is because the fonts are incorporated into the bit-map of any page which uses them and downloaded all in one go. If you want to go the whole hog and use the Bitstream fonts in softfont mode on a laser, you have to run the Fontware Installation Kit, a separate utility.

With this program you pick the fonts you want and wait (for anything up to 12 hours!) for them to be generated. Once this has been done, GEM automatically uses the downloadable fonts in preference to the bit-mapped versions.

There is a further complication, though, as there are separate drivers for the bit-mapped and softfonts, and some GEM applications can't use the bit-mapped driver (*GEM Artline*, for one). It's easiest to generate the softfonts and use the softfont driver for all applications. The only disadvantage is the amount of space the softfonts take on disk and in your printer's memory – you really need over 1Mb to print anything but a fairly basic page.

One last point; programs like *GEM Draw Plus* and *GEM Graph* can only use the default font sizes supplied with them. Although you can add up to three extra typestyles, you can only use them in the sizes you find in the Type menu.

The right ANSI

In my other guise (or one of them) as Disk Editor for *PC PLUS*, I get a lot of phone calls relating to the cover disk supplied each month. Quite a number of callers have trouble with the idea of the ANSI driver, and how to install it on their systems. Since there are probably some *Express* readers with similar confusion, here's what it is and how to use it.

The ANSI driver interprets screen codes used by some programs as commands to change colours, flash text and produce a variety of other screen effects. You can tell if a program uses the ANSI driver, as if it can't find one the codes it is giving out will display on the screen as odd symbols, such as fractions or box-drawing graphics.

To install the ANSI driver you have to do two things. First, copy the file ANSI.SYS from your MS-DOS master disk (the red disk, if you're using an Amstrad PC) onto the disk you use to start your PC with. On a floppy disk machine, this will usually be a copy of the MS-DOS disk, and may already have ANSI.SYS on it. Check by typing DIR. On a hard disk machine look on the C: drive, in the root directory – the one you would normally be in straight after starting the PC.

Once you have ANSI.SYS in the root directory of drive A: or C:, edit the file CONFIG.SYS, by loading it into an editor like RPED, or word processor in non-document mode. Add the line:

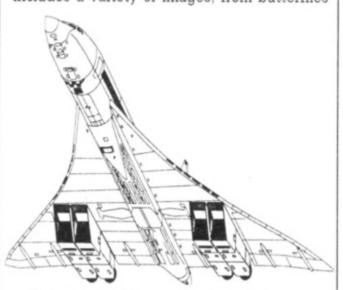
```
DEVICE=ANSI.SYS
```

to the file and save it again – don't worry that there may be other lines in the file beginning DEVICE= something.

Now when you reboot your PC, the ANSI driver will be automatically installed. You can still run any programs which don't use ANSI.SYS.

Art for art's sake

Oh, I can't keep away from the DTP/graphics stuff. The latest goodies to come out of Electric Distribution, which handles *Timeworks DTP* among other things, are two packages called *DrawArt* and *ScanArt*. *DrawArt* is a set of vector graphic clip art (as used by *Timeworks DTP*, *Ventura*, *GEM Artline* and *GEM Draw Plus* which is rescaleable and professionally drawn. It includes a variety of images, from butterflies to aeroplanes and totals some 150 pieces in all. *ScanArt* is a similar package, but provided as bit-images (the kind of graphic you'd obtain from a scanner, hence the name).



• Give your DTP pages more Vroom with images like this

Both packs are available for PCs and the young upstart Mega STs for £49.95 and £39.95 inc VAT respectively, or you can buy the pair at an introductory price of £69.95.

Simon Williams

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AMIGA BLIT

Workbench 1.3 at Last!

Well, I never thought it would happen, but it has; *Workbench 1.3* is now officially available.

After months of having to put up with Commodore staff saying "It'll be with you in two weeks", I've finally managed to get my hands on a release version of *Workbench and Extras 1.3*; complete with manual, packaging, the works.

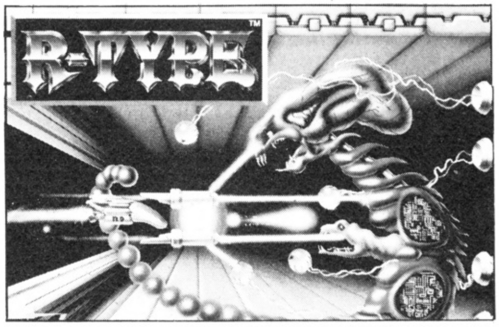
I won't waste time and magazine space by waffling on about all the wondrous features offered by *1.3*, you can read about them elsewhere in *Express* and you've probably heard all about them a million times before anyway. The only thing that is worth noting for those of you that only buy *Express* to read my humble words is that Commodore, as I predicted in a recent *AmigaBLIT*, has bundled the *KickStart 1.3* disk for A1000 owners with the *Workbench* upgrade. Oh its so nice when something you predict actually happens!

Katakis...er, Denaris

While everyone else has been singing the praises of Activision's official *R-Type* conversion on other formats, US Gold seems all set to re-release the Rainbow Arts *R-Type* look-a-like, *Denaris*.

Denaris, originally called *Katakis* but now renamed for some strange reason, had the two software giants at each others' throats due to the undeniable similarities between the two products. The release of *Denaris* was then put on hold but it seems at long last, Amiga owners can get their hands on this classy rip-off, er... game.

I've been lucky enough to have seen *Denaris* and even from the first glance, its quite obvious why Activision objected. The good news is that *Denaris* is undoubtedly one hot game and Activision will have to come up with something pretty special if Amiga *R-Type* is to overshadow it.



• R-Type: under threat from Denaris?

It seems that Rainbow Arts has a bad habit of producing games that are perhaps a little too similar to already existing games. Probably the best examples of this are Garrison and more recently Great Giana Sisters, a game that has since been withdrawn because of striking similarities with the arcade classic, Super Mario Brothers.

While all the legal wranglings that have come about because of software look-a-likes are quite understandable, it not particularly good news for the software buyer. In the case of Rainbow Arts, many of the games that it produces are of very high quality and it is a great shame that the many in the UK will not get the chance to play their games. When a game is withdrawn so that a software house who holds the official licence can release their, more often than not, sub-standard product, this is even more of a tragedy for the average computer user.

If the official conversion is good enough, it shouldn't have to worry about imitators as the buying public will choose that product over the imitator because of its arcade background. Sadly, many official conversions are substandard due to the fact that a high proportion of the development costs goes to pay for the name on the box.

1.4 Latest

As promised in last week's *AmigaBLIT*, this week well take an indepth look at *KickStart* and *Workbench 1.4*. At this stage, nothing is definite and the final specification could change but at the recent European Developers Conference, Commodore did discuss several areas that will almost definitely appear in *1.4*.

Message Port

If you have any views on any issues raised within AmigaBLIT or any issue within the Amiga scene in general, why not write in and air your opinions; don't worry, we'll supply the soap box! Similarly, if you have any great tips or tricks for either games of serious software that you think will be of interest to other AmigaBLIT readers, why not send them in also? The address to write to is: AMIGA BLIT, New Computer Express, 4 Queen Street, Bath BA1 1EJ.

Much of what is offered by *1.4* is centred around the new Enhanced Chip Set and therefore upgrading to *1.4* will not only be a case of purchasing a new *KickStart* chip, but to take full advantage of *1.4*, you'll also need to obtain the ECS upgrade.

Probably the most major enhancement offered by *KickStart 1.4* and the ECS will be the raising of the chip memory barrier from the standard 512k to a full 1 Mb. Obviously, A500 and A1000 owners will need a RAM expansion board to take advantage of this facility but for those of you who are lucky enough to have 1 Meg, the increase in speed should be very noticeable. Most software, if written along Commodore's guidelines should take advantage of this facility.

As an added bonus, increasing chip memory to 1 Meg will mean that many old software titles that fail to work on an unexpanded Amiga should work without any problems on a 1 Meg Amiga; just think, no need to run *NoFastMem* every time you wish to run a program such as Aegis *Animator*.

Other enhancements include new screen modes, some long overdue enhancements to *Intuition* and *Workbench* (a standard file requester may be built into ROM) and colour and fast fonts built into ROM. How Commodore intend getting this little lot into an already packed *KickStart* ROM in unknown. Some speculate that *Intuition* may be removed from ROM and put onto disk but if this does happen, a lot of programs that rely on intuition will suddenly stop working.

Jason Holborn

SPEX

Wordy program

I was most relieved to see my desperate plea for some serious Spectrum software didn't fall on deaf ears. I 'm not sure how much longer I could have kept back the hordes of readers demanding more column space to such things.

With the big bucks end of the Spectrum software market given over almost entirely to entertainment, it's good to see some farily small companies are dedicated enough to program something other than games and, in certain cases, have the talent to produce some really nifty software.

There will always be people who tell you the Spectrum's not powerful enough for desktop publishing or to assemble properly, butl they've probably just blown £400 on the latest wonder machine, so take no notice.

Now a thesaurus on the Spectrum sounds like a pretty tall order, doesn't it? Tall to the point of being impossible, in fact. To be fair, *Fastword*, from Bruce Publishing, isn't a true thesaurus but an alternative word program which starts with Abandon, ends with Zest and lists about another 6,000 words in between.

Operation is easy; just type the first two letters and then scroll through pages to select your chosen word. You can then call up an average of 20 synonyms and cross-references. It's by no means as comprehensive as a more traditional paper-type thesaurus, and some people are bound to say "Why go to the hassle of loading it at all when you can just flick through Roget's?" If you take that particular argument to its logical conclusion, why bother messing around with these stupid computer games when you can play a nice board-based one like *Monopoly*!

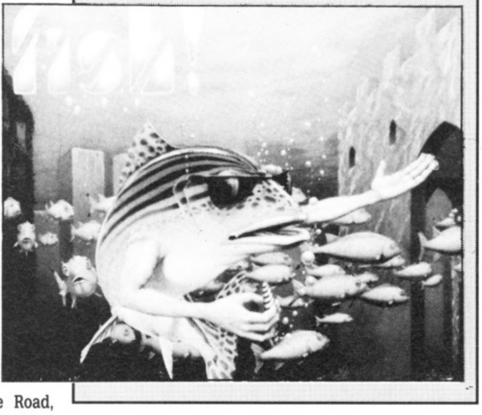
I don't think *Fastword* is really practical to use like a standard thesaurus when you'r writing a blockbusting novel or essay, but if you insist on doing crosswords or wordsearches it could be worth your while to load this one up. The price – £12.95 – is perhaps a few quid too expensive, but just think of all the typing the poor programmer's had to do! The address for Bruce Publishing is **72A Lawe Road, South Shields, Tyne & Wear NE33 2AJ.**

Good Cod!

The adventure which spawned hundreds of fishy puns a lot worse than that one is due for release on the +3. Fish is the wacky and zany game which offered unparalleled amounts of, er, wackiness and zaniness in its 16-bit incarnation.

Taking control of an Inter-Dimensional Espionage Operative with the ability to warp into any number of different bodies, you start the game as a fish swimming the the protective surroundings of your bowl.

No graphics – as is the norm with Magnetic Scrolls' Spectrum conversions – but who needs them when you've got imaginations as vivid as ours?



Strong language

Now if those serious types still aren't satisfied, this should shut them up: Mira Software has sent me the latest version of its Pascal and Fortran compilers for the Spectrum.

These are two comprehensive packages which allow you to compile programs in Pascal or Fortran and run them independently. Not recommended for beginners who want to learn either language; you'd be better off with a book from the library, I suspect, since these programs are designed for people with a basic knowledge of the subject and who want to mess about without spending a fortune. Contact Mira Software at **24 Home Close, Kibworth, Leicestershire LE8 0JT.**

Anco's January box

If you're the kind of person who drools, slavers and makes strange gurgling noises whenever there's a strip poker game in the vicinity, go away – your sort is not wanted in a high-class column like this! So far the Spectrum has been saved the embarrassment of having a large number of these 'games' available for it. We leave things like that to ST and Amiga owners.

Chief purveyor of such stuff, Anco, has finally decided to convert one of its games to the Speccy. *Maria's Christmas Box* is the title, so maybe Anco should sort out its release dates, as well as its morals.

The Maria in question is, of course, Maria Whittaker, the lady who's done wonders with a sheet of bacofoil in the cause of computer game promotion. The ST version received a huge one-star rating in its *Express* review, and looking at what's happened on the Spectrum, you can't help thinking it's about one star too high.

Like most strip poker games, the blurb goes to great lengths to point out what an excellent, realistic and tough poker simulation it is. I wonder how many people will buy it for that reason?

Whatever your moral viewpoint is, you really will not want this to go anywhere near your Spectrum. The graphics are murky, the game's too easy and a copy of *The Sun* costs £9.81 less and provides both Maria Whittaker and more entertainment.

Willy tip

The re-release of that classic oldie *Jet Set Willy* provides me with an excellent opportunity to search my extensive tips library and regurgitate a cheat forgotten by time itself.

Simply type WRITETYPER and find out what happens.

Robin Alway

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SECTOR 64 SECTOR

New Releases

System 3, the creator of such hits as *International Karate, IK+, Bangkok Knights* and *The Last Ninja 1 & 2* has some new releases lined up for 1989. They include *Dominator, Tusker* and *The Last Ninja 3*. Other games in the pipeline are:

▪ Incredible Shrinking Sphere ▪ Activision

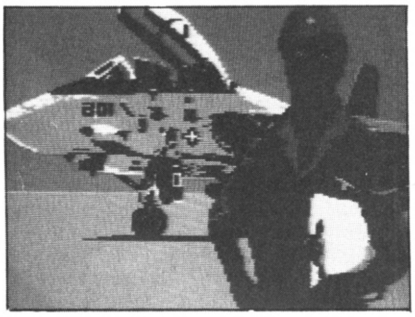
This game features eight levels subdivided into four tiers. You control a sphere which changes in velocity and inertial, and face lost of other, assassin, spheres, traps and prisons to keep the action wild.

▪ Battletech ▪ Infocom

Visit the largest RPG universe ever in this outing, with over four million locations to visit. There are also animated sequences in the distinctive style of Japanese "MANGA" comics. We'll give you more news on a release date when we have it.

▪ F14 Tomcat ▪ Activision

Scheduled to be released at the beginning of February, *Tomcat* recreates the career of a naval fighter pilot from Whiting NAS in Florida to California-based Miramar NAS. Apparently, real-life flight characteristics are accurately simulated to let you experience aerodynamic modelling, realistic acceleration and flight ceiling and true-to-form loops. You have to qualify for missions and have to deal with a variety of training characters such as no-nonsense "Admiral Hawk".



• F14 Tomcat: Out soon on the C64

▪ Real Ghostbusters ▪ Activision

Based on the cartoon and comic series, this is a conversion of the arcade game by Data East. Loads of ghosts are making lemons of themselves, and you get to zap lots of creatures, including birds with telescopic necks...

Attractions include 8-way full-colour scrolling, superb sound effects, one or two-player facility (nice one), dynamic intro screen and fast-moving animation.

It certainly sounds a very interesting game. If it's as good as *Ghostbusters* then we're in for a real treat.

▪ Timescanner ▪ Electric Dreams

This Sega arcade conversion is heading your way in April. It consists of four levels: Volcano, Saquarra, Ruins and Final. Levels are divided into two screens and the machine scrolls between the upper and lower parts of that level. Each level is accessible only via a time tunnel on the previous level. Entry to the tunnel depends largely on your pinball skills.

The game features a realistic nudge and tilt feature; multiball facility – up to three balls on-screen at any one time; up to six flippers on-screen; double length, double height screen; special final bonus screen – a completely new *breakout* game.

Commodore Show

This year's show is scheduled for June 2nd – June 4th. More news when we have it.

Hawkeye cheat

Thanks to Steven Storey of Buckie, Scotland, for this handy poke. Reset the computer after the game has loaded, and then enter:

POKE 7468,173 (unlimited lives)
POKE 6105,189 (unlimited weapons)
SYS 23558 (starts the game)

Ian + Mic

Listing

This listing may come in handy for basic title pages that look very boring. By boring, we mean where there's nothing happening at all. This could all change.

The program searches for all the stars (*) on the screen. When it finds the poor little character it paints it with a new colour which is the same as that of the last star, but one ahead. The idea is that if you place them evenly it'll look as if the stars are scroll-ing.

Type in the program and run it. You can continue your normal program from line 170. The programme in code starts at 51725, which is $CAOO.

What about you?

If you have a listing which you would like written for Sector 64, drop us a line saying what you want the program to do and – who knows – you could get your own custom-built program published in this column. Write to Sector 64, 4 Queen Street, Bath BA1 1EJ.

```
10  R=51725:SYS58692
11  POKE53280,0:POKE53281,0
20  FORL=0TO64:READA:POKEB+L,A:NEXTL
30  DATA 169,0,133,254,133
40  DATA 252,169,4,133,255
50  DATA 169,216,133,253,160
60  DATA 0,162,0,177,254
70  DATA 201,42,208,7,169
80  DATA 107,145,252,238,38
90  DATA 202,173,41,202,230
100 DATA 254,208,2,230,255
110 DATA 230,252,208,2,230
120 DATA 253,165,255,201,8
130 DATA 240,3,76,27,202
140 DATA 169,30,141,38,202
150 DATA 238,69,202,96,0
160 POKE646,01
170 PRINTTAB(10)"*******************"
171 PRINTTAB(10)"*******************"
172 PRINTTAB(10)"****ANY*STAR*ON****"
173 PRINTTAB(10)"****THE*SCREEN*****"
174 PRINTTAB(10)"****WILL*FLASH*****"
175 PRINTTAB(10)"****IN*ORDER*OF****"
176 PRINTTAB(10)"****COLOUR*FROM****"
177 PRINTTAB(10)"****THE*LAST*******"
178 PRINTTAB(10)"****STAR*SCANNED***"
179 PRINTTAB(10)"********'*'********"
180 PRINTTAB(10)"*******************"
181 PRINTTAB(10)"*******************"
190 SYS51725:GOTO190
```

CPC centre

Dare to dream

If you're a Saturday morning TV person you'll probably know all about TVS' *Motormouth*. For the last month or so they've been featuring *Weird Dreams*, in which the hapless hero comes up against the likes of the Maggot Monster and a flock of hideous vampire bats.

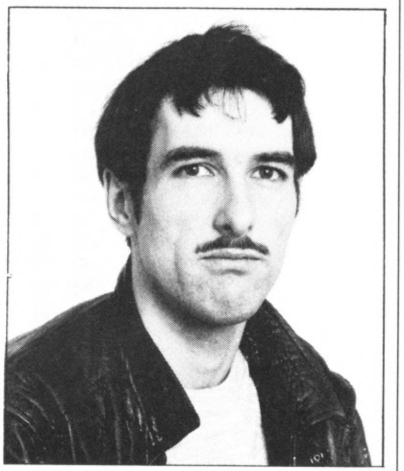
I don't suppose *Weird Dreams* will look quite like that when it finally arrives on the CPC from Rainbird, but it's certainly something to look forward to. It's programmed by James Hutchby, who wrote the rather spiffing OCP Art Studio. Graphics artist is Herman Serrano.

And just in case you were wondering, they don't use the CPC to do the *Motormouth* version – it's an Atari ST Mega 2, and they use a Genlock board to interface with TVS' own video equipment.

It's quite a coup for Rainbird to get forty minutes' prime time advertising for their game, and should boost sales no end. Makes advertising on local radio look a bit weak, doesn't it?

We have five of the limited edition *Motormouth/Weird Dreams* teeshirts to give away to the first five entrants who give a correct answer to the following question: What is the first prize in the *Motormouth Weird Dreams* game?

Entries please as quick as you like to **Steve Carey, CPC Centre, NCE, 4 Queen St, Bath BA1 1EJ**.



• James Hutchby: in the news with both Advanced Art Studio and Weird Dreams

Word processing for junior

Peter Brunning of Brunning Software, who bestowed upon the world *Brunword 6128* and *Infoscript*, tells me they're doing a new "junior" version of the word processor at £12.95. It's got everything the full program has, except that the text area is smaller and you can't add words to the dictionary. Sounds like a good way to get into word processing. Brunning Software is on 0245 252854.

Art in the right place

First the bad news. Rainbird, as we suspected, has dropped the *OCP/Advanced Art Studio*. The good news is that the licence has been bought back by the people who originally wrote it. Bill Richardson, Managing Director of EEC (OCP as was) told me that they'd been very happy with Rainbird, and had seized the opportunity to start selling the range direct. Prices will be £15.95 for *Art Studio*, Bill says, and £19.95 for the Advanced version.

Rainbird appears to have been having something of an early spring-clean, because they've also dropped the *Advanced Music System*. Rainbird's Assistant Marketing Manager Claire Edgeley said: "Every so often we reassess our range and decide whether we should be keeping on certain packages. The *Advanced Music System* has been with us a long time, and we made the decision on a hard commercial basis".

It's a big pity, because it was the best music editor around that used the CPC internal sound chip. Still, I believe there's at least one company interested in acquiring the rights, so all is not lost. Watch this space for more news...

Shoot your Amstrad

There's a little more news on the CPC light gun I talked about exclusively in these pages last week (the Pulitzer Prize must still be stuck in the post).

It appears that we are indeed soon to have the opportunity to join the Amiga, Sega and Nintendo crowd, who can all shoot their machines (specifically, monitors).

If things work out well this could be very good news indeed, helping further to boost the CPC's image as a good games machine. There are one or two major difficulties to be overcome first, though, as Dave would be the first to admit. Chief among these is getting software houses to take part, because without their co-operation the thing is of very limited use.

In this respect the Amiga experience suggests caution would be appropriate. US Action's light gun has not really taken off, simply because it works only with US Actionware games.

Just imagine, though, what a light gun would do for something like *Operation Wolf* or *Prohibition*!

Electric Studio can be found on 0462 420222.

Steve Carey

Masters of dizaster

Had Richard Darling on the 'phone about that unfortunate bug in Treasure Island Dizzy (loved the game by the way – definitely the kind of thing most ten or twelve year olds would go for in a big way). You'll already have read about it in the news pages of Express last week: the bug concerned the rather 'Dizzastrous' (ouch sorry ed it oof won't happen again) consequences of entering the water with your snorkel on. Instead of a happy ending, the game crashes and you're back to square one, and all the horses and all the kings men couldn't put Dizzy together again.

Anyway, Mr Darling wanted to send a special message to any of you CPC Centre readers who may have been landed with one of the faulty copies. "If you can't take it back to the shop", Richard said, "either because it's too far or you've lost the receipt or whatever, send it back to us and we'll replace it". The address is: Code Masters, Lower Farm House, Stoneythorpe, Southam, Warcs CV33 ODL, and the phone number is 0926 814132.

But he is, for obvious reasons, insisting that you return the faulty cassette. After all, this is £2.99's worth we're talking about here...

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PCW PATCH

CPMPD

Digital Resarch's CP/M was the first operating system to be implemented across a wide range of machines. The idea of a portable operating system is not new but CP/M is the only one to have achieved any level of popularity. Unlike MSDOS, which really exists now only on machines with slavish copies of the IBM architecture, or Unix (which means 'one' and exists in 57 varieties), CP/M programs will almost all run on any machine supporting CP/M, needing only minor patches for the screen codes.

CP/M programs are upwardly compatible, which means stuff written under version 1.4 will run under 2.2, and that will run under 3.00 (our own). The keepers of the CP/M faith are the CP/M and MSDOS User Group UK, which currently has over 450 volumes of CP/M PD software on disc averaging 240k per volume and all catalogued. Copying charges are a paltry £2.65 per volume inc. postage and VAT.

End of an era?

Did you know that Digital Research is no longer supporting the CP/M disc directory structure in its 16-bit operating systems? Can you carry on now that you do know?

Membership is currently £11.50. Contact **The Secretary, 72 Mill Road, Hawley, Darford, Kent DA2 7RZ**. Be nice to her or she'll make you suffer – and I speak from experience.

Plug in and...stop

Locomotive's *Locofile* ((£29.95) is now available and many people are buying it. One nice feature is that installing *Locofile* automatically raises all the other bits to version 2.2, so you have the latest version of *Locoscript*, *Locomail*, *Locospell* et al.

But consider this: what was once a plug in and go system for naive users can now involve them in an installation procedure with up to seven discs containing *Locoscript*, *Locomail*, *Locospell*, *Locofile*, fonts, printer drivers, and keyboard setup discs. That lot would tax your average PC user yet barely rates a mention among far more intelligent PCW owners.

Bright sparks

Lightning BASIC from CP Software, who are all very clever people, has been released in an upgraded version, *Lightning BASIC Plus*. As well as the plethora of wonderful graphics commands *Lightning* makes available they have now added even more goodies.

Cleverest addition is the ability to run a .COM file from within BASIC. You can now write a program that allows lines like 10 #RUN SHOW.COM to give you access to the CP/M .COM files from within your programs.

In fact you can run almost any .COM file smaller than 32k. When the .COM file quits you don't go back to the CP/M prompt but to where you left off in BASIC. This is of course impossible. £24.95 from CP Software tel (0993) 823463.

Steve Patient

QL corner

In search of software?

If you're interested in adventure games you could do a lot worse than send £4 to **Richard Alexander, CGH, Cwm Green Hall, Pencader SA39 9HA** (055934 574). This buys you a year's membership of *QLAF*, and four issue of his journal. I got lost, but I dare say that rabid adventurers would find something to sharpen their swords on!

Even more "wouldn't its"

Wouldn't it be sensible if our hypothetical dream machine used Motorola 68000 technology, instead of cart-horse Intel 80x86s or ancient Zilog Z80s? The reason that IBM throws 80x86s (one of the nastiest processors to write code for) into PCs just might have something to do with the fact that the IBM corporation owns a massive chunk of Intel. The best Z80 machine is the Spectrum, and that really says it all!

Wouldn't it be wonderful if RAM not needed by any of the multitasking jobs running on our machine was put to good (and transparent) use, say by performing an automatic cache of as much of the contents of all operating drives – not just the device maps or directories – as will fit? File saving, slave blocks, the lot.

Wouldn't it be super if our BASIC automatically stored all procedure names together with the address of their defining line, so no runtime was wasted scanning?

Wouldn't it be lovely to have an open-count repeat facility with no time penalty as compared to FOR...END FOR? Repeat allows for conditional multiple branching and exiting, with far greater flexibility than FOR loops.

Tip of the week

We've just mentioned Repeats. Few realise that you can exit from an inner loop in a hierarchy of nested Repeats directly to any outside "level". There is no need to painstakingly move one hop at a time. REP OUTER_LOOP: DO_SOMETHING: REP INNER_LOOP: DO_SOMETHING_ELSE: EXIT OUTER_LOOP: END REP INNER_LOOP: END REP OUTER_LOOP both works and is legal.

The secret revealed

Regular devourers of this column will have met many "wouldn't it be wonderful" wish lists in the past few weeks. Well, there'll be more of them. But the time has come to reveal to you the identity of the dream machine.

Well, you already own it. It is the Sinclair QL! (What do you mean, you guessed already?) Every single facility mentioned is fully implemented on a standard QL (and on all its derivatives): if you haven't taken advantage of the features covered, that is your fault. So before you downgrade to one of those pestilential beasts which all seem to have names beginning with an 'A', remember you already have something 'A+' (groan).

Bettering your BASIC

Next time round, a head-on between all the BASIC programming aids (compilers excluded) – watch this space.

Eric Simmonds

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BEEB BOX

School support

Hard-pressed IT teachers should breathe a small sigh of relief this week, as Acorn gets its free ACORN SCHOOLS SERVICE (their capitals, not mine) off the ground.

> ## Black box
>
> ***I have now located the piece of software with the silliest name ever, and it is Dribble. Now this sideways ROM image is not, as far as I know, a dietary plan for the editor of Acorn User, but something that keeps track of what keys you have typed when a program "falls over".***
>
> ***It could be very useful indeed, but what I really need is a program that tells you why a journalist "falls over" after lunch...***

Launched at the recent BETT '89 (British Education and Training Technology) show, it aims to provide a whole raft of services for teachers in this sector.

The cynical view of this is that Acorn is just protecting its 'manor' from intrusion by upstarts such as Apple and Commodore. However, I am inclined to support the more charitable view that at last Acorn is showing some consideration for the poor end-user.

One look at the range of services on offer supports this view, including as it does a free video, free subscription to the Acorn Education News and three months' free use of the SID database. There will also be demonstrations, dealer backup and hotline support. Most schools should soon be receiving enrolment forms, not to mention the chance to win an Archimedes 440 into the bargain.

SIS shakeup

The last time I looked at SID it was in a pretty sorry state, but it all looks set to change for the better by April, now that Philip Colmer has taken it over full time.

Talking to Phil on the phone, he was keeping his cards pretty close to his chest. But he did reveal that telesoftware was set for a shakeup, and that users' suggestions were being incorporated in the new setup.

One thing he did say for certain was that users of discontinued products would have self-help groups set up for them. This could be good news for Electron owners and the like.

Certainly a lively forum for debate will be a good thing, and I for one hope to contribute.

One thing they will have to sort out, though, is their organisation. I recently received their literature about joining up. The only fly in the ointment was that it arrived in an envelope with no stamp, and so I had to pay 25p surcharge for the privilege!

About-face

If you are having trouble with your modem talking to itself, then you could have the same problem I encountered recently.

The RS423 lead was plugged into the computer the wrong way round after someone else had used it to transfer files from a Z88.

Andrew Brown

MSXTRA

Snowed under

I have had a flood of letters in my mail this week (all right, two). They came via the *Express* offices, hence the delay.

A Mr Broad of Weymouth, asking if he can expand his Pioneer PX/7 and use it for more serious use, and also if I can put him in touch with any MSX user groups.

Well, Mr Broad, the answer is "yes" to both questions. Firstly, for anyone with an MSX with only 32K to play with, the best way of using its capabilities is to use software that is supplied on ROM. This means that you won't be using up any of your miserly 32K.

You also mention that you wish to use your PX/7 for word processing, and although you will be limited regarding the amount of text you can store, it will still amount to many pages of A4.

Two cartridge-based word processors I can recommend are *Bank Street Writer* by Toshiba (if you can find a retailer that still has it in stock), or Computermates' *MSX Text*. You will also need an MSX-compatible printer – luckily, any Epson-compatible will work – and an MSX printer lead. If you have difficulty finding a supplier, try **D L Chittendens, 59-61 The Broadway, Chesham, Bucks**, tel 0494 784441.

Regarding your next question about MSX user groups, there are at least six established groups in the UK, but there isn't the space here to list all the addresses. I have already mentioned *MSX TECH* and *MSX LINK* in previous issues of *Express*, but one I will mention this week is *MSX Gazette*. This group produces a monthly A4 newsletter (as do most groups) consisting of about ten pages of news, reviews and listings for your machine. For more information send an SAE to **MSX Gazette, 47 Reedswood Road, Hastings, East Sussex**.

The second letter I received was from a Mr P G Long, and contained tips for Dinamic's *Game Over* and *Game Over II*. The access code for part two of *Game Over I* is **65535**, and that for part two of *Game Over II* is **18757**. Thanks, Mr Long.

> ## Moan of the week
>
> ***It seems that for most MSX games these days you could read "Spectrum" games, as the conversions seriously underuse the MSX's capabilities. Don't these software houses realise that the MSX can have 16 colours and 32 sprites on-screen at once? Come on, you programmers, let's use the machine's features fully, and stop giving MSX users monochrome games.***

Afterburner reheat

Activision has now supplied me with a production version of *Afterburner*, and – great news – it loads! I'll now get down to a bit of joystick bashing, and hope it plays as well as it is packaged.

Another game just in is *Pacmania* by Grandslam. Initial impressions are are very favourable. Hopefully I will have some hints for you next week and some more comments on the conversion.

Keith Neal

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PSsst!

Another dose of antidote to computing hype

A Day in the Life

Once again Pssst looks at twenty-four hours with real life people and their machines. This week it's the turn of Eric Lombard, businessman, from Bradford in West Yorkshire

I get up at six sharp. Time is money, that's what I always say. I look at the Financial Times to see how my shares are doing and then I go straight to work. The Devil finds work for idle hands.

This year I've completely computerised my textiles business. It cost me sixty thousand but it was worth the investment. My accountant assures me. Advice like that doesn't come cheap but it's worth it. You have to speculate to accumulate.

I started off with PC XTs but they weren't powerful enough so we upgraded to ATs. I have to make decisions like this you see. It cost another hundred thousand to kit out the whole office. Don't mess about, me. Speak as I find, call a spade a spade.

Anyway at seven I start work. I don't actually use the PCs myself. I get trained operators to do it all. Fifteen thousand a year, they want, but you get what you pay for, that's my motto. They almost finished the keying-in of all our customer records when we upgraded so we had to do the lot again. Two weeks it took. Well, at that time I didn't realise that you can actually use XT formatted discs in AT machines. But the copies will be useful. That'll save us making copies on the computer – we haven't worked out how to do that yet. Can't understand the manual. We've ordered some tutorial books instead. Anyway, you learn by making mistakes, that's my outlook on life.

I work through till lunch without a break. All work and no play may make Jack a dull boy but it makes him bloody rich, that's my philosophy. I have a sense of humour too, as you can see.

After lunch I meet clients and so on. Today I saw a chap from London who will write me an accounts software system. I think software is a good thing and I'm all for it. We have to keep up with the times, that's what I believe.

The system will cost me ten thousand, but he says he'll implement it all himself. I think software should be implemented. This is a good idea. I'm all for progress. Then it should start to save me money.

You see, the software we had before was some sort of off-the-shelf accounts program. It was only £400 and I think we were wrong to skimp. I don't believe in false economy. After all, the word processing package we have for writing letters isn't all that good, and that was £1500! But it should save us money in the long run. It'll begin to do that just as soon as the girls from the typing pool have finished their word processing course. A local consultant is doing it for £600 per person per day by the way. I beat the chap down. He wanted £700, but I could see he was trying to do me. You have to be hard in this game, have a nose for a good deal.

Everything in our office will be on disc one day. I think a paperless office is a good thing. Waste not, want not, that's me. At six before I go home I make backups of every disc. And I also make sure we have a printout of everything that's gone through the computer that day for emergencies. We're having an extension put in to store them.

On the way home I like to read through computer magazines. To tell you the truth much of it is above my head but I like to keep up. I think the next thing I shall buy is a spreadsheet. There's one here for £1,800. It's not just some cheap and nasty program. I could do all sorts of things with it, like – well, like doing calculations and so on. Looks very useful.

I get home at eight and have supper. Then I read the FT and go to bed. Usually my two boys are upstairs playing games on their computers. They play lots of violent games. It's disgusting. When I was their age I was in the Army, fighting for the country.

One has an ST and one has an Amiga. They were dear mark you, a few hundred pounds each. I mean they're both just toys really aren't they. And £25 just for a game, mind! It's ridiculous. Kids today! They spend all their money on computers. No business sense at all.

NEXT WEEK

Monitors

Which screen is the best for your machine? Express reveals the best buys

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We report on the State of the Art in television graphics

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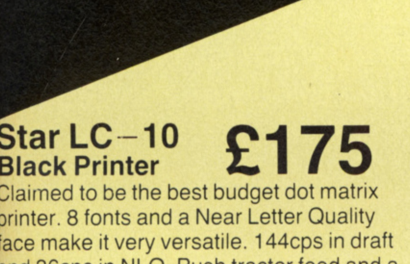

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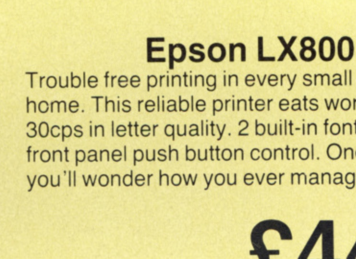

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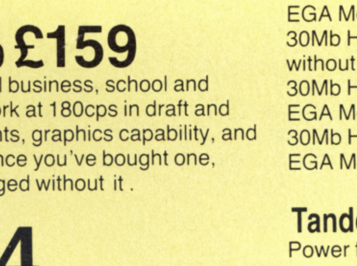

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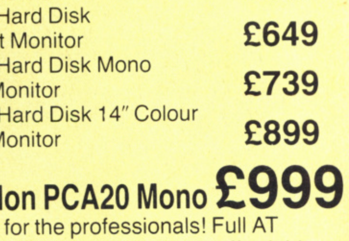

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